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REUNION IN CHICAGO

The National Society's Annual Conference returns to the mid-west city after a long interval, and appraises the work of the intervening years.

THE 1956 Conference of the National Society, held March 26–28, was in the nature of a reunion—a return to Chicago after an interval of 29 years. In 1927, as in 1956, the three-day meeting had the generous and active support of the Illinois Society for the Prevention of Blindness, and then, as now, there was a joint evening session with the Chicago Ophthalmological Society.

"This meeting gives us an opportunity to reflect on the gains made in our work since our last official visit here," said President Mason H. Bigelow in welcoming the delegates gathered in the Palmer House on the first day of the conference. "Such reflection can be rewarding, particularly for those who, in that earlier and somewhat less complicated time, were active in some phase of blindness prevention. Your colleagues of 1927 were much concerned with trachoma; they had ophthalmia neonatorum on the road to defeat, but it was still present. They were not to hear of retrolental fibroplasia until 15 of the 29 intervening years had passed—years of the stock market boom and crash, depression, recovery and war.

"Trachoma today is almost nonexistent in this country. Ophthalmia neonatorum is only a minor factor in our considerations. We have encountered retrolental fibroplasia, we have met its serious challenge, and at least one key to its prevention has been found.

"Quite obviously the battle against blindness has not stood still; these have been years of progress."

Rise in Blindness

But blindness has not stood still either, Mr. Bigelow emphasized. Preliminary estimates indicate that 27,000 persons became blind during 1955, and that there are more than 334,000 blind persons in the United States today. With our population continuing to grow, and with more and more people living on into the age groups where degenerative factors will begin to have serious effects, the total number of blind will continue to rise. In viewing with some satisfaction the achievements of the past we must realize that the need for prevention of blindness work is greater today than ever before.

"Each of us engaged in this effort knows that half the blindness occurring in this country today can be prevented," said Mr. Bigelow. "We all know that broader use of the sight-saving information which has been gathered over the years will wipe out many forms of unnecessary blindness. This is the front-line area of service in which many of you are personally engaged. I know the year which lies ahead will be just as fruitful for you and the people you serve as the years which have already passed.

At the Annual Conference in Chicago Mason H. Bigelow, right, president of the National Society, presents Indiana state charter to Dr. Walter A. Jamieson of Indianapolis. Looking on are Roy E. Endicott, safety supervisor, Delco-Remy Division of GM, Anderson, and Dr. Hedwig S. Kuhn of Hammond.

Acute Need for Research

"I would like to mention briefly, however, the other half of current blindness—that which cannot now be prevented. Whether due to a disease whose causes are still mysteries, to hereditary factors, to experiences at or preceding the moment of birth, or to a combination of factors which appear with age . . . this blindness today defeats us . . . totally. There is but one weapon we can bring against it: research. We know research can yield rich dividends; the story of retrolental fibroplasia is dramatic proof of the richness of the yield.

"Yet, we are dragging our feet when it comes to eye research. We are spending far more on cosmetics to prettify our eyes than we are spending to discover the facts needed to keep them seeing. Eye research is growing, but it is by no means growing along lines significant with the magnitude of the task.

"When you return to your home communities if you will add to your regular duties the responsibility of helping to make your fellow citizens aware of the need . . . the urgent need . . . for more intense attention to eye research, and a more general willingness to help pay the bill for it, you will have helped make the future a brighter one for all mankind."

Benefits of Cooperation

Mr. Bigelow voiced satisfaction over the relationship of the National Society and the Illinois Society, one which has proved to be mutually beneficial. He expressed gratitude to

Frank H. Woods, Illinois Society president, and to Mrs. Dorothy Gray, executive secretary, for their untiring help in the arrangements for the 1956 conference.

Subjects for Discussion

The principal subjects for discussion at the 1956 meeting were: finding persons with eye trouble early and arranging care; progress in industrial vision programs; upgrading educational facilities for partially seeing children; multi-discipline approach to social and emotional adjustment of school children with eye handicaps; vision testing methods and follow-up procedures; putting television to work for an agency's program; glaucoma—a community problem; and scientific advances in prevention of blindness.

Among those serving as chairmen of the various sessions were Mr. Woods; John C. Nebo, state consultant, Education for Exceptional Children, Illinois Office of Public Instruction; Roy E. Endicott, safety supervisor, Delco-Remy Division of General Motors, Anderson, Indiana; Mrs. Hazel C. McIntire, director of special education, Ohio State Department of Education; and Dr. Derrick Vail, professor of ophthalmology, Northwestern University Medical School.

Joint Evening Session

A delightful informal reception was held late Monday afternoon, March 26, in the Top of the Rock, a room at the top of the new Prudential Building on Chicago's lake front that commands a magnificent view of the entire city. Dinner was served in another section of the building, followed by the joint meeting of the Chicago Ophthalmological Society and the National Society with Dr. Daniel Snydacker as chairman. Dr. Derrick Vail's most interesting discussion of the progress achieved through the cooperative efforts of the Chicago Ophthalmological Society and the Illinois Society is an important contribution to this issue.

At this evening meeting Dr. Franklin M. Foote, executive director of the National Society, outlined progress in the nationwide fight against blindness and the problems that we now face. "Much of what has been accomplished in the past in preventing blindness and various diseases," he said, "has been done by influencing relatively small numbers of people. For example, boards of education can require vaccination against smallpox before a child enters school; then their staffs will see to it that every child is vaccinated. Boards of health or state legislatures can require the use of prophylactic drops in babies' eyes immediately after birth, and proper enforcement procedures will make sure that this is done. Hospitals can require adequate control of oxygen if it is prescribed for a premature infant, and we should have little or no more retrolental fibroplasia.

"But there seems to be no procedure that we can require people to follow that will as easily prevent blindness from most of the eye conditions of middle and later life. The patient with a detached retina needs early and competent care if the operation is to be a success. The patient with acute uveitis, with glaucoma, with many other conditions, needs early care and needs to follow the oculist's instructions to the letter if he hopes to avoid loss of sight. The retinal detachment patient must get into the proper

California becomes NSPB's newest chapter in ceremonies at headquarters in Beverly Hills on April 26 as Jack White, right, accepts the state charter from Dr. Franklin M. Foote, NSPB executive director. Mr. White will become chapter president. Mrs. Burnetta Blatt Downing, former NSPB nurse consultant, has been named executive director.

hands, must accept the diagnosis, and must be willing to have an operation promptly.

"This means that we are discussing individual, highly personal problems. It means that we must somehow influence in the right way every one of the 167,000,000 persons in the United States if we are to make progress in combatting blindness from these causes. The average person does not like to go to a doctor, even when he has serious eye symptoms. Even though he is frightened by the idea of blindness he has a good deal of inertia and hopes that somehow his eye trouble will just go away by itself, the way it came."

Dr. Foote referred to a recent study by a California oculist which showed that 69 per cent of eye patients never before have even heard of glaucoma, to say nothing of understanding its implications. Medical societies and departments of public health are doing a great deal to inform the public on health matters in general, but their efforts in so specialized a field as blindness prevention need reinforcement. Therefore a voluntary citizens' agency such as the National Society, in which both professional and informed, interested lay persons are joined in partnership, can make a great contribution in bringing about a better-informed public. Then an eye patient will be more likely to cooperate in the plan of treatment outlined, when told of the diagnosis and the regimen.

Dr. Kronfeld's Address

A large and enthusiastic group of delegates heard Dr. Peter C. Kronfeld of Chicago discuss "Glaucoma—A Community Problem" at the conference luncheon on March 28. Dr. Kronfeld explained that in glaucoma one finds at least two distinct entities, so different from each other that for all practical purposes they may be considered as different diseases.

The acute type of glaucoma is characterized by episodes of blurred vision which so impress the patient that he is likely to seek medical attention without undue delay. The chronic type on the other hand is so gradual and insidious in its development that much peripheral vision may be lost before the victim is aware of it. In a population of people over 40 years of age chronic glaucoma occurs with a frequency of one to two per cent. The disease spares no age group, but occurs with less frequency among younger people.

"We are fortunate," said Dr. Kronfeld, "in that chronic glaucoma occurs principally in an age group in which

the need for eye care is made quite clear to the individual by his receding near-point—that is, by his need of optical aids. From 40 on the average person is made more and more aware of a change that has occurred in his eyes and of a need for remedial measures. It behooves the ophthalmologist or optometrist to think of chronic glaucoma whenever he examines a patient over 40, just as the physician, quoting from a recent article in the *Journal of the American Medical Association*, 'must think of cancer during every examination if cancer is to be detected.' "

Dr. Kronfeld discussed community projects for mass screening and those which have been done successfully among industrial employees, notably in Philadelphia. He stressed the fact that mass screening is expensive in terms of money and working time and that it takes a great deal of good will. He expressed the belief that the general physical examination by the physician, for whatever purpose it is done, offers opportunities for glaucoma detection that have not been sufficiently utilized. Ophthalmoscopy is routine in such examinations and tonometry can and should be made another routine step.

A number of internists and general practitioners in Chicago, said Dr. Kronfeld, are following this practice. It would be facilitated if in teaching institutions, hospitals and rural communities the practicing ophthalmologist arranged a one-to-two hour ophthalmoscopy clinic once or twice a year in which specific features of glaucoma were stressed. The detection of field defects has been made very much quicker and easier by Dr. David O. Harrington's field screening instrument, which requires only average power of observation on the part of the examinee, just a little experience on the part of the examiner (nurse, technician or office assistant) and not more than 10 or 15 minutes' time.

Vision Testing Methods

On the second day of the conference Stella L. Brueggen, R.N., special consultant of the Illinois Society, conducted a demonstration of vision testing methods and follow-up. At the session on "Putting Television to Work," held on March 28, Mrs. Dorsey Connors of NBC Television, Chicago, served as moderator. The panel members were: Mrs. Betty Ross West, supervisor, Public Affairs and Education, Station WMAQ and WNBQ-TV, Chicago; George A. Heinemann, director of programming, NBC, Chicago; James J. Cox, information specialist, Florida Council for the Blind, Tampa.

Charter to Indiana

A highlight of the conference was the ceremony on the opening day in which Indiana was made a working chapter of the National Society. Mr. Bigelow presented the state charter to Dr. Walter A. Jamieson of Indianapolis, chapter secretary. Dr. Jamieson, first state chairman of the provisional committee from which the chapter was created, said the new group plans to establish state headquarters in Indianapolis, and branches in Indianapolis, Terre Haute, Evansville, South Bend and Fort Wayne. The branches will serve smaller neighboring communities as well as their home cities.

"This will create," he explained, "a truly effective network of volunteers, medical men, civic workers and state,

county and municipal health officials working together through programs of service and information to eliminate the needless economic loss and human suffering of blindness." State headquarters will be at the University of Indiana Medical Center, Indianapolis.

Indiana volunteers present at the charter ceremony included Miss Jane L. McBride of Fort Wayne; E. O. Prange, Albert Shulman, D.D. and Carl J. Rudolph, M.D., of South Bend; and R. W. Tubesing, O. D., of Richmond.

1957 NSPB Conference to be Joint Meeting with Pan American Association of Ophthalmology

The next Annual Conference of the National Society for the Prevention of Blindness will be a joint meeting with the Pan American Association of Ophthalmology, and will be held at the Hotel Statler, New York City, April 7–10, 1957.

Registration for the Pan American Association will begin on Sunday afternoon, April 7, at one o'clock, the opening session at four o'clock, and scientific sessions will be held all day April 8 through 10.

The morning sessions are planned as follows:

Monday, April 8, 9:00 A.M.—*Lesions of the Ocular Fundus*

Tuesday, April 9, 9:00 A.M.—*Ocular Surgery*

Wednesday, April 10, 9:00 A.M.—*Ocular Therapeutics*

The NSPB afternoon sessions are scheduled as follows:

Monday, April 8, 2:30 P.M.—*Planning and Conducting a Community Prevention of Blindness Program*

Tuesday, April 9, 2:30 P.M.—*Children's Eye Problems*

Wednesday, April 10, 2:30 P.M.—*Glaucoma Detection Programs*

It is suggested that delegates to the joint conference make their room reservations directly with the Hotel Statler well in advance.

AAOO HOME STUDY COURSES

The 1956–1957 Home Study Courses in the basic sciences related to ophthalmology and otolaryngology which are offered as a part of the educational program of the American Academy of Ophthalmology and Otolaryngology will begin on September 1 and continue for a period of 10 months. Detailed information and application forms can be secured from Dr. William L. Benedict, the secretary-treasurer of the Academy, 100 First Avenue Building, Rochester, Minnesota. Registrations should be completed before August 15.

NEW FELLOWSHIPS

The Guild of Prescription Opticians has established 18 fellowships for residents in ophthalmology to assist young physicians during the required three years of intraining. Each fellow will receive a monthly stipend from his total of $1800. The fellowships will be divided among six geographical areas in the United States and Canada, and selection of recipients will be made by a committee of ophthalmologists. Information may be obtained from the Guild at 110 East 23rd Street, New York 10, N. Y.

RLF STOPPED IN OREGON

No new cases of retrolental fibroplasia were reported in Oregon in 1955, says the *Oregon Health Bulletin* for January 1956. Incidence of this blinding disease in premature infants has fallen steadily from a total of 32 in 1951. A survey of 29 hospitals over the state showed that 75 per cent were undertaking to restrict oxygen therapy to a concentration of 40 per cent or less, but only seven hospitals had equipment for regulating oxygen in incubators.

Ophthalmology and the Illinois Society for the Prevention of Blindness

DERRICK VAIL, M.D.
Chicago, Illinois

A broad state program of blindness prevention has been built on a solid foundation of professional and lay cooperation.*

JUST 40 years ago, on April 1, 1916, the Illinois Society for the Prevention of Blindness was incorporated in Illinois. This was eight years after the formation of the National Society for the Prevention of Blindness and it is pleasant to record that during these years the two organizations have worked well together for the common purpose.

The Illinois Society came into being because Dr. William H. Wilder of Chicago, one of America's most distinguished ophthalmologists, decided to do something about the steady stream of needlessly blinded patients who flowed through his office. Deeply disturbed, he approached the late Dr. E. V. L. Brown and they, together with prominent and interested lay persons, signed the request for incorporation. They wisely provided that no ophthalmologist nor any other person who might be self-interested professionally should ever become the Society's president.

Although many ophthalmologists, members of the Chicago Ophthalmological Society, were seriously concerned and sympathetic with the noble aims of the Illinois Society, and many were faithful contributors to its funds, it was not until 1927, strangely enough, that official liaison with the Chicago Ophthalmological Society was established. The immediate past president is always appointed officially to cooperate with the Illinois Society and several committees have been appointed from time to time to work on specific problems. Also the Chicago Ophthalmological Society has in recent years generously contributed to the Illinois Society's funds, supplemented by individual contributions from many of its members who are aware of the aims and purposes of the ISPB.

Mutual Objectives

It is interesting to speculate on why it took 11 years to accomplish this present active support and cooperation with the Illinois Society, for it seems obvious to us now that these two organizations are after all working for the same purpose, the prevention of blindness; and that we need each other very much indeed.

There may well have been several reasons for this delay in getting together, but I think the primary one was a misunderstanding and general suspicion on the part of ophthalmologists, who are notoriously conservative, of any lay organization entering a medical field. As long as prevention

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, Chicago, Illinois, March 26, 1956.

of blindness meant agitation for the wearing of protective goggles and the use of other protective devices in the industrial field; the prevention of ocular injuries, especially to children, in the home; the development of classes for the partially seeing in our schools; and perhaps aid to the near-blind or even those already blind, we ophthalmologists felt that these things, important as they are, were actually none of our business. But these were not the things that Dr. Wilder and Dr. Brown were thinking of, I am sure, when they started the ISPB. Their early concern was with the serious problems of trachoma and ophthalmia neonatorum as preventable causes of blindness.

Trachoma Survey

These two perceptive ophthalmologists some years before had made a survey of the trachoma situation in southern Illinois and published the results in the biennial report of the Illinois Charitable Eye and Ear Infirmary. In 1920 they suggested to their fellow directors of the ISPB that a new survey of this problem be sponsored by the Society. The directors agreed to sponsor and finance for six months eye clinics, staffed by personnel from the College of Medicine, University of Illinois, to be held in Mt. Vernon, Harrisburg, Benton, Marion and Carbondale. The counties of Jefferson, Saline, Franklin and Williamson, hotbeds then of trachoma, were covered; 244, or 20 per cent, of 1,164 patients seen were found to have trachoma. This careful pilot study showed that the problem of trachoma, especially in southern Illinois, was truly a most serious one. Indeed it was overwhelming when we consider the non-specific forms of treatment that were then known but, alas, not readily available to the victims of this disease in counties where there were very few ophthalmologists.

In June 1928, under the guidance of Dr. Wilder, a study of blind pensioners was begun by the Illinois Society. In his report to the Chicago Ophthalmological Society on May 20, 1930, he showed that 349 blind pensioners out of 3,181 had lost their sight because of trachoma, and he stated that the ISPB had made plans for an aggressive attack on this problem.

Methods of Treatment

In October 1927 Dr. Harry S. Gradle succeeded Dr. Wilder as vice-president of the Illinois Society, and with characteristic optimism and enthusiasm began to clean up the situation with the scanty tools then at hand. In June 1934, with the help of special funds from Governor Horner, clinics were permanently established in southern Illinois, some of which are still functioning. In the *Illinois Medical Journal* (70: 569, 1936), A. F. Lenzen summarized the treatment used in southern Illinois. He mentioned that it was prolonged and required the complete cooperation of the patient. Chaulmoogra oil, quinine bisulfate, and judicious surgery in selected active cases as well as in old scarred ones were efficacious. "In our hands," Dr. Lenzen said, "many persons were able to resume their duties in the fields, mines and homes, after several months' treatment." An educational campaign, improvement in economic status, building of good secondary roads and other related factors were emphasized.

Early in 1938 Dr. Gradle heard of the use of sulfanilamide by Dr. Fred

Loe of the United States Public Health Service in the treatment of trachoma in Indians. With his usual and uncanny acumen he investigated this work and after persuading Dr. Loe he cajoled me, as secretary of the Section on Ophthalmology of the American Medical Association, into putting Dr. Loe on the scientific program, long closed, for that June. I believe this was the first paper on the use of sulfanilamides read before American ophthalmologists. It was most impressive and is now a classic in ophthalmology. Dr. Gradle, immediately on hearing of Loe's work, had begun to use sulfanilamide on the cases of trachoma in Illinois and by 1950 the disease was definitely beaten in the state.

By that time the eye clinics in southern Illinois had proved themselves to be so valuable to patients, and to the young ophthalmologists working therein, that a number of these doctors were encouraged to set up their practices in these areas where no ophthalmologic care had been available. In these rural places our colleagues by their work continue to prevent blindness, a most fruitful and entirely unexpected corollary of the original plan of the ISPB.

Treatment of Eyes of Newborn

In May 1931 the Governor of Illinois vetoed the bill to make mandatory the use of silver nitrate in the eyes of the newborn. This bill had been sponsored aggressively by the ISPB, and the fight was led by Drs. Wilder, Brown and Gradle, backed by the Chicago Ophthalmological Society. On the train back from Springfield, bitterly disappointed, Wilder poured out his troubles to a brilliant journalist, James Weber Linn, who was inspired to write a most scathing editorial (*The Pen-Sword*) on the pusillanimous governor. It began: "The Governor vetoed the bill to make the treatment of the eyes of newborn babies, to prevent blindness, compulsory. He said the attorney general was not sure that the bill was constitutional, and the fear of any unconstitutional legislation makes the Governor shudder. He would a great deal rather the babies should be blind than that he should be found wrong in a constitutional interpretation."

I cannot here give all of the editorial but it had a most telling effect, for in the next meeting of the legislature the mandatory silver nitrate law was passed. Almost overnight, blindness from ophthalmia neonatorum was wiped out. From 1933 to 1944, only seven babies were blinded by this disease and none at all have been blinded since 1944. Illinois was 10 years ahead of the country in this respect, thanks to the far-reaching results of the work of the officers and directors of the ISPB and the active participation of members of the Chicago Ophthalmological Society.

Space does not permit me to do more than tabulate the other pregnant projects jointly conceived and carried out by these two organizations. There are, for example, the classes for partially seeing children, and the special courses for their teachers; the examination of the children at the School for the Blind, a case-work job for the ISPB and surgical intervention by the members of the Illinois Eye and Ear Infirmary.

In the days of the great depression 76 Chicago ophthalmologists, members of the Ophthalmological Society, to

their great credit registered with the ISPB as willing to see at a reduced fee, or at no fee, children referred from overburdened clinics.

The ISPB has succeeded in its efforts to place a qualified ophthalmologist as consultant to the Illinois Public Aid Commission, and another to the State Department of Public Welfare, Division of Services for the Blind.

In 1943 a program was launched to promote greater visual efficiency and safety in small industry. The best plant showed only 50 per cent of the workers with normal vision and the worst one with only 14 per cent normal. All examinations were performed by Illinois ophthalmologists.

A plan was developed by ISPB in 1944 to study and place patients with amblyopia ex anopsia, with the cooperation of a committee of the Chicago Ophthalmological Society composed of Drs. Nethercut, Leech and Gamble. Glaucoma clinics, still partially supported by the ISPB, were established at the Illinois Eye and Ear Infirmary in 1937, and at Cook County Hospital in 1953.

The Illinois Eye Bank was established in 1947 as a joint project of the ISPB and the Chicago Ophthalmological Society. Its need and activities require no comment, except as to the enthusiastic and continuing support by both parties. In 1948, with the approval and support of the Chicago Ophthalmological Society, the ISPB launched the first visual screening program which includes joint guidance and direction from ophthalmology and optometry. In 1953 a study to find out about the eye problems in premature infants, particularly data on retrolental fibroplasia in Illinois for the year 1952, was launched with the help of the Chicago Ophthalmological Society. In 1954 a study was made jointly to determine the need of and desire for a central eye pathology laboratory in Illinois.

Since 1941 all Illinois ophthalmologists have given strong support to anti-fireworks legislation in Washington, D.C., and in Illinois. This legislation has been sparked by the ISPB.

There have been joint contributions by members of both organizations to meetings with the public on problems concerning eye health. Plans directly ahead involve a cooperative research project on glaucoma.

This is indeed a most remarkable and noteworthy list of cooperative endeavors for the welfare of all in the great State of Illinois, and in fact it shows advances far beyond the idea that prevention of blindness means only preventing ocular injuries in industry or in the home, important as these factors are.

Current Problems

The field of prevention of blindness embraces all of ophthalmology. It means the prevention of injuries and diseases to the eyes; the application of measures that will prevent all but a small and perhaps irreducible number of cases of blindness.

Why then do we still have blindness with us in such appalling numbers? I think it is because, first, the general public is not sufficiently educated in these problems; second, there are not enough ophthalmic clinics and expert ophthalmologists available; third, and most curiously, an apathetic attitude toward our specialty by our medical and surgical colleagues; and fourth,

insufficient funds for ophthalmic research. This last is rapidly being overcome. Our embarrassment now is the lack of trained workers and proper facilities for experimental work.

Ophthalmologists urgently need the services of the lay organizations working for prevention of blindness. We need them especially in sponsoring and supporting pilot studies that show the way to proper legislative support; we need them to tell the story of ophthalmology and what it means to the public; we need them to help us get support for our clinics and our laboratories and especially to lend their appealing prestige to everything that has to do with ophthalmology, which in the final analysis means prevention of blindness.

These organizations need us to give them expert advice on our mutual problems; to point out the way of success in the important studies and projects that are being planned; and to supply skillful and active professional help where and when it is needed.

In Illinois truly wonderful things have been accomplished in the past by the cooperative efforts of ophthalmology and the Illinois Society working on a remarkably small budget. The need for continuing our mutual association is obvious to all who know the facts. The prevention of blindness is the concern of us all.

LASKER AWARD TO STEVEN SPENCER

For his article, "Mystery of the Blinded Babies", published in the *Saturday Evening Post* of June 11, 1955, Steven M. Spencer received an Albert Lasker Medical Journalism Award of $1,000, and a silver statuette of the Winged Victory of Samothrace, symbolizing victory over death and disease. Four awards for outstanding reporting on medical research and public health were presented at a luncheon at the Ambassador Hotel, New York City on May 23, 1956, at which Dr. Howard Rusk, associate editor of the *New York Times* and one of the judges of the awards competition, presided.

The annual awards were inaugurated in 1949, and are given in cooperation with the Nieman Foundation for Journalism at Harvard University. The citation for Mr. Spencer commended him "for describing the dramatic twelve-year search for the cause of retrolental fibroplasia—blindness in premature babies; for his skillful, sympathetic reporting of an epic medical quest culminating in the recognition of excess oxygen as the villain; for his inspiring insight into the problems confronting the clinical investigator; for his understanding and ability to relate this research to the human and emotional cost of blindness to the child, the family and the community; and for his brilliant exposition of laboratory and hospital triumphs which have notably stimulated public interest in support of medical research against the disabling and killing diseases."

Steven Spencer was born in Omaha, Nebraska, July 3, 1905, and after graduation from the University of Pennsylvania in 1928, he entered journalism with the specialty of science writing. He was a Nieman Fellow at Harvard in 1939. Since 1947 he has been an associate editor of the *Saturday Evening Post.*

DIAGNOSIS AND TREATMENT OF NEUROLOGIC EYE DISEASE

THOMAS P. KEARNS, M.D.

Section of Ophthalmology

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The close relationship of the eye to the brain predisposes it to certain diseases of the nervous system. Prompt diagnosis is of utmost importance if blindness is to be prevented in those diseases for which there is effective treatment.†

THE human eye is actually a portion of the central nervous system. As the embryo grows a portion of the brain becomes more or less separated and comes to lie on the surface of the organism. This delicate and most important special sense organ is exposed to the environment and all of its accompanying dangers. Although relatively well protected by the brow, nose, eyelids and certain reflex mechanisms, this portion of our central nervous system lacks the protection afforded the brain by the bony cranial vault. The dangers of injury inflicted by scissors, nails, firecrackers, BB shot and other agents are all too well known.

The close relationship of the eye to the brain predisposes it to still other dangers. A number of diseases that affect the nervous system also affect the eye. Multiple sclerosis is one of the best examples. Other disorders of the brain, such as tumors, affect the eye in an indirect manner, resulting from the fact that the visual pathways may become secondarily involved. These visual pathways consist of the optic nerves and other bundles of nerve fibers connecting the eye with the visual centers of the brain. They are long and extend across the base of the brain to reach the visual centers in the back of the head known as the "occipital area." Such a long course means that tumors or other pathologic conditions of the brain often damage these pathways and give rise to visual difficulty or even blindness.

The fact that the eye is often involved in this manner is of great help to the neurologist and the neurosurgeon in detecting the presence and locating the position of disorders of the brain. Many brain tumors first manifest themselves by alterations of vision in one or both eyes, and by careful study of such alterations it is often possible to locate the trouble accurately and at times to predict the exact type of difficulty. However, we are interested at this time not in the eye as it concerns neurologic diagnosis but in neurology as it concerns loss of vision and blindness.

Until fairly recently, let us say in the last 25 years or so, little could be done in the way of surgery on the central nervous system. As in all fields of surgery, great strides have been

* The Mayo Foundation, Rochester, Minnesota, is a part of the Graduate School of the University of Minnesota.

† Presented at the Annual Conference of the National Society for the Prevention of Blindness, Chicago, Illinois, March 28, 1956.

made in neurosurgery. This has been particularly true since the advent of the antibiotics and the steroid group of drugs, that is, penicillin and cortisone. Better anesthetic procedures, improved operative technics and postoperative care have also helped to reduce morbidity and mortality. The present-day neurosurgical procedure in which the head is opened involves little more danger than the general surgical procedure of opening the abdomen.

Such improvements place a great responsibility on the doctor seeing eye patients. He must be alert to the possibility of disorders of the nervous system that may damage vision, in order that the patient may be referred to the neurosurgeon early enough so that a cure may be effected. The patient himself also has a responsibility in not passing off some eye difficulty as "eyestrain" or as need for new glasses which he never gets around to obtaining. Prompt examination is as important as prompt diagnosis if vision in such patients is to be salvaged.

Pituitary Tumors

Pituitary tumors are one of the most frequent neurologic conditions producing loss of vision. This results from the close proximity of the pituitary gland to the optic chiasm or crossing point of the two optic nerves. Loss of vision is usually the first and only symptom of these tumors. I have chosen to discuss pituitary tumors first because the early diagnosis rests with the doctor engaged in caring for the eyes. The earlier the diagnosis is made the easier it is for the neurosurgeon to effect a cure. This situation is analogous to glaucoma in that early detection usually means prevention of blindness, and lack of recognition or neglect means blindness.

The patient first complains of dimness of vision in one eye, but this dimness is soon followed by difficulty with the other eye. He will be found to have a reduction of his visual acuity that is not corrected by glasses. When this occurs, plotting of visual fields as a method of diagnosis is indicated. Plotting the visual fields means examining the extent and characteristics of the patient's peripheral vision. When this is done properly the presence of a pituitary tumor as a cause of the loss of vision may be determined. Examination of the optic nerve heads with the ophthalmoscope is likewise important, since prolonged pressure of the tumor on the nerves produces pallor of the optic nerve head. An x-ray of the head usually reveals enlargement of the pituitary fossa, the bony depression in which the pituitary gland lies.

There are other examinations and tests, such as determination of hormonal changes, that aid in the diagnosis of pituitary tumors, but the examination of the visual fields is the most important test. By carefully plotting the visual fields the characteristic defects of the pituitary tumor are found. The patient should then, of course, be referred to the neurosurgeon, since the earlier the tumor is removed the better is the chance of recovery of vision. If the tumor is recognized immediately, before permanent damage from pressure occurs, vision often returns to complete normalcy.

Meningiomas

Meningiomas make up one of the largest groups of brain tumors. Like the pituitary tumors, they are not

malignant in the sense of being cancerous but are malignant in that their pressure effects are dangerous. They occur very frequently around and in the vicinity of the optic nerves. For this reason they usually affect only one eye. The history is one of slow, painless, relentless loss of vision of one eye leading to complete blindness of that eye. Such a condition may be misdiagnosed as an inflammation by the doctor or disregarded by the patient as a normal sequence of events.

Examination of visual fields is not as much of a help here as in pituitary tumors, but it does offer a way of recording the progression of the loss of vision. The x-ray of the head is the important diagnostic aid in that around 50 per cent of these tumors may be visualized. However, with the prompt recognition of the progressiveness of the visual loss even without x-ray findings, neurosurgical exploration is sometimes advisable.

Again, prompt recognition by the patient of the seriousness of the trouble and prompt diagnosis on the part of the doctor are imperative if vision is to be saved.

Other Tumors

Tumors at any place in the brain are likely to obstruct the flow of the cerebrospinal fluid. When this occurs the pressure builds up in the brain, producing the characteristic headache symptoms. In some manner this pressure is transmitted by way of the optic nerves and produces a swelling in the nerve heads known as "choked disks." In the early stages this swelling or choking of the disk causes no visual difficulty and is of importance only as an indication to the examiner of trouble in the brain. If the condition causing the obstruction is not removed or means made to bypass the obstruction, loss of vision does occur.

This is a slow, progressive loss of vision that may lead to complete blindness. It is true that many of these patients soon die of their brain tumors, but a number of them will be found to have curable conditions or conditions in which neurosurgery may prolong life.

Cerebrovascular Disease

The usual "stroke," when it affects the vision, blacks out a half of the patient's visual field. This occurs because the condition involves one side of the brain and, just as it may paralyze the opposite side of the body, it may likewise affect the opposite side of the patient's vision. This loss of vision is referred to as "homonymous hemianopsia"; that is, one half of each eye is blinded. This is a great handicap, but the patient is not completely blinded.

There are some "strokes" that result from disease of the basilar artery, the single artery that divides to supply the occipital lobes of the brain. As mentioned earlier, it is in this area that the visual centers are located. When a "stroke" results from basilar artery disease, the patient may be completely blind or so nearly blind that he has no useful vision. A number of the patients will have warning of impending trouble in that they experience transient blacking out of their vision along with other transient neurologic troubles. Recent experience with drugs that slow down the blood clotting mechanism seems to indicate that such "strokes" may be prevented.

The results of this investigation regarding treatment of intermittent

basilar artery insufficiency are not complete, and I mention the subject only to call attention to another field in which recognition of the visual trouble may lead to appropriate therapy as a means of preventing blindness.

Cranial Arteritis

Cranial arteritis is an interesting disorder and a fairly new addition to our recognized neurologic diseases. It was first described in 1932, although it had undoubtedly been seen before. It is an inflammation of the arteries of the head, usually the scalp vessels in the temporal area. Its importance to us is that the central artery of the retina is involved in about one-third of the cases. In one-half of the patients so affected the other eye will become involved, complete blindness being the result.

The disease affects people of 65 years of age and over, headache being the most outstanding early symptom. Its cause is unknown, but it is thought to belong to the group referred to as the "collagen diseases," in which the new steroid drugs, such as cortisone, are effective. This form of therapy seems to be very effective in this particular disease. It halts the inflammation and therefore prevents the blindness which is the biggest threat. I have seen numerous patients who have been blinded in one or both eyes by this disease, but I have never seen one lose vision after proper therapy with cortisone was begun.

It is readily seen that it is important to recognize the disorder, and this is particularly true if one eye has already been blinded. I recall one patient in whom this condition was diagnosed and who was advised to enter the hospital for treatment. Since the Christmas holidays were approaching, she could not be persuaded to do so, even though the danger of blindness was described. She returned home and in several days awoke to find one eye completely blind. Needless to say, she returned promptly for treatment, and a cure was obtained without any involvement of the other eye.

Multiple Sclerosis

I have purposely discussed those conditions in which a cure is often possible. There are numerous other neurologic conditions accompanied by loss of vision in which there seems to be no effective treatment. Multiple sclerosis is the commonest disorder in this category.

Patients with multiple sclerosis frequently develop optic neuritis, an inflammation of the optic nerve. The symptoms of this eye involvement are usually the appearance of slight discomfort in and around the eye, followed by sudden blindness. By sudden blindness is meant a process taking one or two days, as compared to the usual slow, gradual course encountered in tumors that affect vision. Both eyes may become affected but usually not at the same time. Fortunately, the vision usually improves and in four to six weeks may return to normal. However, if repeated attacks occur, permanent reduction of visual acuity results. It is rare to see a person made a visual invalid from the optic neuritis of multiple sclerosis, but many are handicapped by it.

The diagnosis of optic neuritis is usually easy, but at times confusion results. The greatest danger lies in misdiagnosing "optic neuritis" when actually some other condition, such as a tumor, is present and valuable time

is lost before the proper treatment is carried out. Once the diagnosis of optic neuritis has been properly established there is little to be done except to wait and hope that the usual clearing of vision will occur. Many forms of treatment are used, but their effects are difficult to judge, since most cases tend to improve spontaneously in four to six weeks anyway.

Summary

The diagnosis and treatment of various neurologic eye diseases are discussed. Some may be cured by proper treatment, while there is no effective treatment for others. Careful examination is necessary, since a correct diagnosis must be made in order to help those patients who have a disease for which there is effective therapy. The responsibility for prompt examination rests with the patient, while the responsibility for prompt and proper diagnosis rests with the doctor if blindness is to be prevented.

MRS. FORMAN ON NSPB BOARD

In recognition of her outstanding services for the visually handicapped, Mrs. Edward Forman of Rochester, New York, has been elected a member of the National Society's board of directors. As former national secretary of the Delta Gamma Fraternity, Mrs. Forman was active in its programs for sight conservation and aid to the blind. She has been keenly interested in the Delta Gamma scholarships for training orthoptic technicians, teachers of partially seeing children and specialists in work for blind children of pre-school age.

Mrs. Forman is a member of the board and the executive committee of the Rochester Orthoptic Center, a director of the Rochester Association for the Blind and president of the Women's Auxiliary Board of the Rochester General Hospital.

NSPB RESOLUTION ON LOCAL HEALTH COUNCILS

The National Health Council is encouraging various professional and citizen organizations to join in local health councils in order to encourage better coordination of community health planning.

At its meeting on April 17 the National Society's Executive Committee passed the following resolution:

The Executive Committee of the National Society for the Prevention of Blindness recognizes the value for community health improvement in the working together of local health and medical organizations. The Executive Committee therefore urges the governing bodies of state and local societies, chapters and committees for the prevention of blindness to (a) participate in state and local health councils or other community health planning bodies, and, (b) where no such local health councils exist, promote in cooperation with other local health agencies the establishment of a local health council.

Among the organizations that are encouraging the development of local health councils are the American Medical Association, American Dental Association, National League for Nursing, American Public Health Association and the Association of American Medical Colleges.

HIGH COST OF TOY

An air rifle in the hands of a careless boy has cost him and his parents $18,750. In 1952, when he was 11 years old, he accidentally shot a younger boy, causing loss of vision in one eye. The victim's family brought suit, which was settled early in 1956 by Judge James W. Morris of the Washington, D. C. district court, who signed a consent judgment against the boy and his parents.

RESEARCH IN DIABETIC RETINOPATHY

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In a current study of diabetic patients an attempt is being made to correlate the tendency to retinitis with the functional status of the adrenal cortex.*

RETINITIS is an important and increasing cause of blindness among persons with diabetes. There seems to be a type of retinitis characteristic of the disease, and not dependent upon other diabetic degenerative changes such as hardening of the arteries and high blood pressure. It is seen in purest form in young diabetics. This type is frequently associated with changes in the blood vessels of the kidneys. Microscopically, the retinal and renal lesions seem to be similar and are considered related. In the early stage these changes appear as capillary aneurisms, i.e., rounded enlargements in the small blood vessels. As the process continues in the retina, vision is destroyed.

The increasing importance of this condition in recent years is attributed to the fact that with improved management of diabetes more patients are surviving long enough to show these slowly developing changes. Some degree of retinitis is now found in most young diabetics who have had the disease for 25 years.

Little is known of the etiology of the condition but there is hope that further understanding may be achieved. Present leads regarding possible contributing factors include: unsatisfactory control of the diabetes; excessive function of the adrenal cortex; relative deficiency of vitamin B_{12}.

Importance of Control

Some evidence for a correlation between a poor degree of control of diabetes and development of retinitis has been presented by various workers. A high degree of control of the disease should therefore be sought. In exceptional cases, early and severe development of retinitis occurs in spite of apparently good control of the diabetes. There are other exceptions where, in spite of poor control of the diabetes, the development of retinitis is not severe. Such exceptions suggest that the picture is complicated by some factor other than the adequacy of the diabetic regime with respect to diet and insulin.

There appears to be little doubt that an increased amount of the "stress" hormones of the adrenal cortex appear in the blood and in the urine during periods of uncontrolled diabetes. Whether an increase is present in patients under the highest possible degree of diabetic management and cooperation remains to be

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, Chicago, Illinois, March 28, 1956. This study has received support from contributions to the National Society for research.

seen and is a part of the effort in our clinic and laboratory. From the work of others on experimental animals, administration of adrenal hormones in the presence of a form of diabetes is known to produce a retinitis similar to that seen in a diabetic patient. It is thus suggested that adrenal cortical hyperfunction may be part of a mechanism whereby poor diabetic control may lead to diabetic retinitis.

Side-Effects of Hormone Administration

Glucosuria is one of the undesirable side-effects of use of cortisone and adrenocorticotrophic hormone. It is possible that in some cases the diabetes is made more difficult to control by a co-existing, possibly pre-existing, adrenal cortical hyperfunction. Attempts have been made to ameliorate diabetic degenerative changes by removal of the adrenal glands or the pituitary. These procedures are yet to be evaluated; however, some apparently good results have been obtained by both.

Current Study

Our present study, still in a preliminary stage, is an attempt to correlate the tendency to retinitis with the functional status of the adrenal cortex in a large number of diabetic patients. It is hoped that analysis of these cases will show the importance of the various factors in the tendency to development of diabetic retinitis. Such factors to be correlated in relation to adrenal cortical function are: duration of the diabetes; age at onset; degree of control; method by which control has been attempted; and type of diabetes—whether the labile juvenile type or the milder type which occurs with obesity and middle age and in which, at first, the insulin deficiency is probably only relative to an increased insulin requirement.

Results to Date

Results obtained in our study have involved determination of the urinary output of 17,21-dihydroxy-20-ketosteroid. The hormone appears as a conjugate which must first be liberated by means of the enzyme beta glucuronidase. The free hormone is then extracted from the urine by organic solvents and, finally, the purified extract is reacted with phenylhydrazine to produce a color which may be read in a spectrophotometer.

Urine studies are being made before and during stimulation of the adrenal cortex by pituitary adrenocorticotrophic hormone (ACTH). Present results are too few to permit a definite conclusion, but suggest that the cases which tend to retinitis have also an increased reactivity of the adrenal cortex. This reactivity shows up as an excessive outpouring of adrenal stress hormone in response to a dose of ACTH. The results also confirm the finding that increased adrenal activity occurs in poorly controlled diabetes. More valid results, and analysis of the various factors which may be involved, await further data.

Such data may further elucidate the mechanism by which diabetic retinitis develops and may lead to understanding by which such complications can be prevented or minimized. There seems also to be the possibility that a practical test may be developed whereby the tendency to retinitis in a particular individual may be evaluated in time for employment of preventive measures such as improvement of the regime for diabetic control.

The Rise and Fall of Retrolental Fibroplasia in New York State

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A preliminary report from the New York State Department of Health, the New York City Department of Health, and the New York State Department of Social Welfare.*

IN 1942 retrolental fibroplasia was established on the medical horizon as a new disease of premature infants.[1] By 1949 it had become the leading cause of blindness in children under five years of age in New York State.[2] Until quite recently attempts to explain its etiology were unsuccessful. During the early 1950's a series of reports in the British and American literature, culminating in the report of an 18-hospital cooperative study in January, 1955,[3] established clearly the etiologic relationship between exposure of premature infants to concentrations of oxygen in excess of 40 per cent and the development of this disease. In the United States the prophylactic use of high concentrations of oxygen in the care of premature infants was considered good pediatric practice as late as 1952. Only an unusually rapid shift in nursery practice could have affected the incidence of this disease in 1954 and 1955. It is gratifying to report that such a shift has occurred in New York State.

This is the first report in the American literature which documents the effect of changing practice on the community incidence of retrolental fibroplasia severe enough to cause blindness. Documentation of this effect is facilitated by the State requirement, effective since April 1, 1946, that all cases of blindness be reported to the State Commission for the Blind of the New York State Department of Social Welfare. Reporting of blindness and the ophthalmologic diagnosis of its etiology are considered to be fairly complete because of the active interest of physicians and ophthalmologists in the work of the commission. In the case of blindness due to retrolental fibroplasia, there is added reason to feel that reporting is fairly complete. To determine the incidence of blindness due to retrolental fibroplasia, Schlesinger and McCaffrey[4] followed up the 3,667 infants born in 1948–1949 in upstate New York who weighed less than 2,000 Gm. at birth and who survived to four months of age. It was later found that 90 per cent of the blind infants in this group were known to the State Commission for the Blind through its routine reporting system.[5]

It should be emphasized that only severe degrees of retrolental fibroplasia are being referred to in the pres-

* Reprinted from the New York State Journal of Medicine; May 1, 1956

ent report, since reporting is mandatory only for individuals who are blind according to the legal definition of blindness in New York State.*

Plan of Action

In the fall of 1953, as evidence that retrolental fibroplasia is linked to oxygen administration became fairly conclusive, the Maternity and Newborn Division staff of the New York City Department of Health during their routine visits to hospitals recommended reduction of oxygen concentrations to newborn infants.

The New York City Department of Health, Pediatric Advisory Committee, at a special meeting in March, 1954, unanimously approved recommendations to this effect. Copies of the committee's statement were distributed to all maternity and newborn services and published in the county medical society bulletins. Oxygen concentration was also limited in the Department of Health's premature transport service ambulance, and a careful check of hospital policies was made by the staff of the Maternity and Newborn Division in its periodic surveys.

In spite of the above efforts it was found that a considerable number of hospitals were still using high concentrations of oxygen. A joint subcommittee representing obstetrics, pediatrics, and ophthalmology was requested later in 1954 to study this subject further and unanimously approved the following recommendations:

1. Oxygen therapy for premature infants whether in *delivery rooms*, *during transport*, or in premature nurseries should be used only when indicated and in concentrations *below* 40 volumes per cent, except in emergency situations. Oxygen should not be administered unless ordered by a physician. Higher concentrations than 40 per cent may be used only for resuscitation of apneic infants for short intervals.
2. Oxygen concentrations in incubators should be checked periodically with an oxygen analyzer.
3. An ophthalmologist should examine all premature infants upon discharge from the nursery and at three months of age.

A copy of these recommendations was also circulated immediately to all hospitals and published in medical society bulletins.

In the fall of 1954, the Bureau of Maternal and Child Health of the New York State Department of Health made plans to distribute comparable recommendations to all hospitals in upstate New York. At the same time a system of following up all cases of retrolental fibroplasia reported to the State Commission for the Blind was inaugurated by both the New York City and New York State Health Departments. After locating the birth certificate of the reported case, a visit was made to the hospital of birth. In New York City the visit was made by a pediatrician on the staff of the Division of Maternity and Newborn Services. In upstate New York the visit was made by the county

* ". . . one who is totally blind or has impared vision of not more than 20/200 visual acuity in the better eye and for whom a diagnosis and medical findings show that vision cannot be improved to better than 20/200; or who has loss of vision due wholly or in part to impairment of field vision or to other factors which affect the usefulness of vision to a like degree."—Chap. 654, Laws of New York, 1945.

TABLE I

Number of Cases of Retrolental Fibroplasia in New York State by Year of Birth and Year Classified Blind (Based on Reports Classified by State Commission for the Blind During 1946–1955)

Year of Birth	Year Classified Blind										Total Cases
	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	
1938–1945	12	9	7	9	3	4	3	..	5	2	54
1946	4	13	3	..	4	2	2	..	2	3	33
1947	..	2	10	14	6	2	5	3	1	1	44
1948	..	..	4	21	14	5	8	2	3	3	60
1949	..	..	..	17	28	18	3	1	6	2	75
1950	..	..	..	..	19	61	20	4	3	3	110
1951	..	..	..	..	..	32	84	27	12	8	163
1952	..	..	..	..	..	..	30	92	33	13	168
1953	..	..	..	..	..	..	..	52	87	28	167
1954	..	..	..	..	..	..	..	..	18	27	45
1955	..	..	..	..	..	..	..	..	..	3	3
Total	16	24	24	61	74	124	155	181	170	93	922

or city health commissioner or district State health officer in whose jurisdiction the hospital was located.

The purpose of this visit was twofold: to gather information on the concentration and duration of oxygen administered to the reported case and to advise the medical, nursing, and administrative staff on policies and practices that are effective in controlling oxygen administration to premature infants.

During these visits the points already outlined were discussed. In addition, three methods for maintaining safe concentrations of oxygen in incubators were reviewed, if indicated. These methods, none of which is entirely foolproof, were described by Lanman in an issue of *Health News*, a publication of the New York State Department of Health:[6]

1. The use of special mixing devices which mix air with 100 per cent oxygen so as to deliver a constant concentration of less than 40 per cent to the incubator.
2. The use of specially prepared tanks containing 40 per cent oxygen and 60 per cent nitrogen.
3. Reduction of flow of 100 per cent oxygen by use of a special flowmeter.

Results

In 1954 Schlesinger, analyzing the incidence of retrolental fibroplasia in New York State by year of report and age at time of report, showed how this condition had reached a peak in 1953.[5] Table I brings the data to 1955. It illustrates the sharp rise, followed by an even sharper decline, in cases of retrolental fibroplasia reported to the New York State Commission for the Blind from 1946 through 1955. A definitive diagnosis of disability due to this disease can be made by the age of six months. However, experience indicates that the heaviest "report year" is the year following the infant's birth year. For this reason the number of cases have been tabulated according to year in which the infant was classified

blind by the commission and year in which the infant was born.

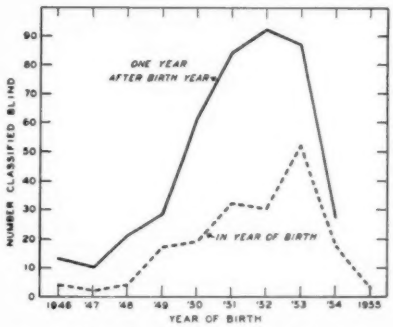

Fig. 1. Number of cases of retrolental fibroplasia in New York State by year of birth and year classified blind, 1946–1955.

It will be observed from Table I that the number of infants classified as blind during their birth year increased from four in 1946 (when reporting was first made mandatory) to 52 in 1953 and declined to three in 1955. The number of infants classified as blind during the year following their birth year increased from three in 1946 to 92 in 1953 and then declined to 27 in 1955. The decrease in cases classified as blind during their birth year was 65 per cent between 1953 and 1954 and 83 per cent between 1954 and 1955. The over-all reduction from 1953 to 1955 was 94 per cent. This striking story is illustrated graphically in Fig. 1.

The pattern observed cannot be attributed to the change in the number of premature births under 2,000 Gm. in New York State since 1946. As a matter of fact, in contrast to the sudden drop in cases of retrolental fibroplasia in infants born in 1954 and 1955, the number of premature births in New York State has continued to rise slightly.[7]

Comment

During 1955, 69 reported cases of retrolental fibroplasia were followed up under the program previously described (Table II). More than half of these cases were born prior to 1954. These follow-up visits were welcomed by hospital administrators and members of the medical staff of every hospital visited. In some instances hospital policies had been modified, and efforts to control the concentration of oxygen administered to premature infants were being rigorously followed. In a number of instances, however, the medical and administrative staff had not adopted well-defined written policies or had relied on inadequate measures to control oxygen administration, although aware of its dangers. When their attention was called to these matters, immediate

TABLE II

Number of Cases of Blindness due to Retrolental Fibroplasia, Classified by New York State Commission for the Blind in 1955 and Number Followed Up* by Year of Birth.

Year of Birth	Classified Blind in 1955	Follow-up	No Follow-up
1946–1952	35	24	11
1953	27	16	11
1954	28	26	2
1955	3	3	0
Total	93	69	24

* Follow-up visit to hospital of birth by pediatrician on staff of Maternity and Newborn Division of New York City Department of Health or by upstate New York county or city health commissioner or district State health officer. Cases born in New York City were followed up regardless of birth year. In upstate New York cases were followed up only if report was received within one year of infant's birth. A few cases could not be followed up because birth certificate could not be located.

measures were taken to remedy this situation.

In all but one of the cases investigated, it was fairly clear that the infant had actually been exposed to high concentrations of oxygen during the first ten days or more of its life. With one exception this exposure was apparently inadvertent, having occurred before clear hospital policies for controlling oxygen concentrations had been developed and put into effect. In a number of instances concentrations of oxygen were not actually measured, but the nature of the incubator used and the liter flow recorded on charts made it fairly certain that high concentrations of oxygen had been delivered.

The two cases which proved exceptions to these general findings will be described in more detail:

CASE 1.—The infant not exposed to oxygen was born in New York City late in 1954. He was a full-term male weighing 7 pounds, 4 ounces, and was delivered spontaneously after an uncomplicated labor of six hours and fifteen minutes. His hospital course was normal, and he was discharged five days after birth. He received no oxygen at any time prior to the development of retrolental fibroplasia. When he was two months of age, his mother noticed that he did not see well and had the child examined by an ophthalmologist who made a diagnosis of retrolental fibroplasia. Because of this unusual story the diagnosis is being investigated more thoroughly as this report is being written.

CASE 2.—The infant whose exposure to high concentrations of oxygen was not "inadvertent" was born in a small hospital in western New York early in 1955. She was a prematurely born female weighing 2 pounds, 10 ounces. Delivery was complicated by premature separation of the placenta. She was in poor condition at birth and, when forty-eight hours old, was transferred to a hospital with a large premature service.

On admission the baby weighed 2 pounds, 5 ounces, and was in great respiratory difficulty. The premature service at this hospital was acutely aware of the dangers of high oxygen concentration. During the past two years only one case of stage I-II retrolental fibroplasia had been observed in this hospital, and no stage III-V cases had occurred. During the first ten days of the baby's hospital stay she had frequent episodes of apnea and cyanosis, requiring rocking to stimulate breathing. Oxygen was needed continuously during this time. Three liters per minute were administered in an Isolette incubator. This gave concentrations up to 40 per cent. However, during the night there were many times when cyanosis occurred even with concentrations at 40 per cent; on these occasions the liter flow was frequently raised to 5 L. per minute in order to clear up the cyanosis. Unfortunately, no concentrations of oxygen were taken during these night periods. On the twelfth day of life, the tenth hospital day, the infant was able to maintain herself without cyanosis or apnea outside of the incubator and was therefore removed. She was discharged at the age of fifty-eight days weighing 2,180 Gm.

Her condition was good at this time with the exception of the eye findings. Stage I retrolental fibroplasia was noted on the twenty-ninth day of life, stage II at the forty-fourth day of life, and stage III on the day prior to hospital discharge. Stage IV was noted on a visit to follow-up clinic at eighty-eight days and stage V at six months of age. It seems quite evident in this case that prolonged oxygen administration and high oxygen concentrations were essential to the preservation of the infant's life and that blindness was unavoidable in the present state of our knowledge.

These cases have been reported in some detail because they were the exceptions rather than the rule. The

follow-up experience as a whole clearly indicates that blindness need not have occurred in the other 67 cases. This experience serves to emphasize the importance of the points already discussed in the control of oxygen concentrations. Certain amplifications of these points seem warranted:

1. Policies dealing with oxygen administration to premature infants must be thoroughly understood and followed by all nursery personnel from attending physicians down to nurse's aids and cleaning personnel. Such policies should be in writing.
2. Oxygen is dangerous to premature infants. It should be ordered by physicians only for medical emergencies, only for short duration, and only in concentrations below 40 per cent.
3. Detailed attention to controlling oxygen concentrations is essential if it is to be administered to premature infants. Because of differences in individual incubator performance, liter-flow regulation cannot be depended upon to control oxygen concentrations, and the use of an oxygen analyzer is essential if this method is being used. An oxygen analyzer is highly desirable if either of the two other suggested control methods are utilized since no mechanical method of control can be expected to be perfect.

Summary and Conclusions

1. Data are presented on the incidence of blindness due to retrolental fibroplasia as reported to the New York State Commission for the Blind, 1946–1955.
2. There was a sharp decline in the reported incidence of this disease when the use of oxygen in the care of premature infants was limited and its concentration controlled.
3. On investigation of cases reported in 1955, it was determined that all affected children except one, a full-term infant, received oxygen in high concentrations and for prolonged duration. The use of oxygen was a causative factor in the development of retrolental fibroplasia in these cases.
4. Continued vigilance is essential for the control of this disease.

Grateful acknowledgments are expressed to Dr. Jean Pakter and Dr. Yvette Brown of the New York City Department of Health and to the county and city health commissioners and district State health officers of upstate New York for their services in following up reported cases.

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REPRINT AVAILABLE

Reprints of Dr. Hedwig S. Kuhn's article in the Spring Issue on "Eye Trays—Contamination and Medication" may be ordered from NSPB. Pub. 221; price 5 cents.

A Study of Non-Occupational Eye Injuries

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This review of records in the files of the Arkansas Department of Public Welfare emphasizes areas in which safety education is needed.

ANY program for prevention of blindness can be helped by the knowledge of how, when and where damaging eye injuries most frequently occur. The eye examination records in the Arkansas Department of Public Welfare files have been reviewed from this standpoint. Of the 17,227 persons who received one or more eye examinations through this department between 1937 and 1955, over 10 per cent or 1,801 gave a history of moderate to severe eye injury. Minor injuries were not tabulated. The majority of the persons were applying for aid to blind assistance or remedial eye care. For this reason there was a high percentage of blind in this series.

Visual acuity of 20/200 or less in both eyes was reported in 45 per cent of the cases; in one eye, 27 per cent. Injury was responsible for only 3 per cent of the blindness in both eyes, but 28 per cent of one-eye blindness was traumatic. Of the combined one- and two-eye blind 13 per cent gave a history of eye injury. A study of eye conditions among pupils in schools for the blind in 1947–48 reported by Kerby[1] showed that 7 per cent blindness in both eyes was due to injury.

Arkansas is not highly industrialized. A large part of the occupational injuries would represent agricultural workers. Therefore statistics on non-occupational injuries are more comparable with other states than those on the total eye injuries. The activi-

TABLE I

Distribution by Sex and Race of Non-Occupational Eye Injuries Compared with State Population

	Non-Occupational Injuries	Per Cent	Per Cent of State Population
White	566	61	78
Negro	358	39	22
Male	681	74	50
Female	243	26	50
Male White	419	45	39
Male Negro	262	28	11
Female White	147	16	39
Female Negro	96	10	11

TABLE II

Distribution by Age Groups of Non-Occupational Eye Injuries Compared with State Population

Age Groups	Eye Injuries		Per Cent of State Population
	Cases	Per Cent	
0–9	322	35	22
10–19	242	26	18
20–29	65	7	14
30–39	54	6	14
40–49	62	7	12
50–59	66	7	9
60–Over	112	12	11
Unknown	1	..	..
	924		

ties engaged in when injured were recorded in 1,260 cases of this series; 924 or 73 per cent were non-occupational and 336 or 27 per cent occurred at work.

Table I shows distribution of cases of non-occupational eye injury by sex and race. A comparison of these percentages with the distribution of the state population in the same groupings provides a rough measure of the relative frequency of injuries in the various groups. These figures indicate that males are injured much more frequently than females, Negroes more often than whites. The male Negro was the most prone to eye injury, and the white female the least. These findings may indicate more opportunity for eye injury or greater carelessness.

The first and second decades of life showed a much larger percentage of the eye injuries compared with the percentage of state population in these age groups. Injuries to persons 60 and over also exceeded the percentage of the population. This may be due to the recklessness of youth and the frailties of age.

The majority of persons were engaged in play or sport (54 per cent) when the injury occurred. In the series reported by Kerby[1], 63 per cent of the injuries happened during play. Household activities accounted for 37 per cent of our series and traffic or transportation for 8 per cent. Fifteen (2 per cent) of the injuries were associated with medical or surgical procedures, including two persons who claimed that the wrong medicine was put in their eyes. Six accidents occurred during a surgical procedure, including one foreign body imbedded in the eye during anesthesia. Seven eyes were damaged by X-ray or radium. Three birth injuries were reported. One of these babies was blinded in one eye; the other two in both eyes.

The relationship between the activity and the sex and race was studied. The males were more often injured during play (57 per cent) and less often in household activities (33 per cent). The females were more often injured in household activities (46 per cent) and less often in sport (44 per cent). This would be directly related to the time the different sexes spend in these two activities.

In traffic, 8 per cent of males and 6 per cent of females were injured.

TABLE III

Non-Occupational Eye Injuries by Sex, Race and Type of Activity

Activity	Total Cases	Per Cent of Cases	Male	Female	White	Negro
Birth Process	3	*	1	2	3	..
Medical & Surgical	15	2	7	8	12	3
Play or Sport	495	54	388	107	310	185
Household	340	37	228	112	196	144
Traffic & Transportation	71	8	57	14	45	26
Total	924	100	681	243	566	358

* Less than 0.5 per cent.

Most of the injuries happening during play or sport were received under 20 years of age; 42 per cent in the first decade, and 38 per cent in the age group 10 to 19. Injuries incurred in household activities were more evenly divided. However, 29 per cent were to children under 10, and 24 per cent to adults over 60. Thirty-two per cent of the injuries to children under 10 years of age were in household activities; as compared with 77 per cent to persons over 60.

The agent that most commonly caused injury varied considerably in the different activities. BB shot and fireworks injuries all occurred during play. Firearms injuries occurred for the most part during sporting activities; but five cases were related to domestic difficulties. Playing with torpedoes, dynamite caps and other explosives caused 17 injuries.

Sharp objects and blows or falls accounted for 69 per cent of the total non-occupational injuries, 66 per cent during play, 72 per cent in the home, and 87 per cent of traffic injuries. All chemical burns and nearly all heat burns were received in household accidents.

A study of the relationship between the activity and the part of the eye injured did not show any important variation. There seemed to be no particular relationship between the resulting visual acuity and the activity. Injury to both eyes was apparently less likely to happen during play or sport. Only 39 per cent of injuries to both eyes occurred during play, as compared with 56 per cent to one eye. The opposite was true in traffic injuries; 16 per cent were to both eyes, and only 6 per cent to one eye.

Although many of the facts revealed in this study are already well known, they should receive more emphasis if we expect to reduce the number of persons blinded by injury. A campaign against fireworks has greatly reduced visual loss. There have been no fireworks injuries in this series during the past four years. BB guns still take their toll, two of the 19 cases in this series having occurred during 1955. Naturally, many more cases of this type were seen in private practice than on the welfare rolls. Publicity should be given to the hazards of sharp playthings, knives, scissors, forks and many other objects especially dangerous to small children and responsible for most of the eye injuries both in the home and at play.

In 1945, Moncreiff and Scheribel[2] reported eye injuries from Cook County Hospital; sharp objects were

TABLE IV

Non-Occupational Eye Injuries by Age and Type of Activity*

Age When Injured	Totals	Play	Household	Traffic
0–9	314	208	100	6
10–19	242	187	47	8
20–29	65	38	19	8
30–39	54	22	18	14
40–49	61	17	34	10
50–59	65	15	41	9
60–Over	104	8	80	16
Unknown	1	..	1	..
Total	906	495	340	71

* Three cases of birth injury and 15 from medical or surgical procedures are not included.

the causative agent in 133 of their 185 cases. Fragments of glass (not spectacle) were the offending objects in many cases. The greater use of plastics as a replacement for glass should help to reduce such injuries.

It is surprising to note in our series the small number of serious injuries due to breaking of the person's own glasses. Certainly seven or eight thousand of these patients must have worn glasses at least part of the time; yet only four cases of severe injuries from breakage of glasses were recorded. However, even those few eyes could have been saved by the use of hardened or plastic safety lenses. Probably a much larger number of eyes were saved by the protection glasses gave them. Eighty-five of those suffering injuries had subsequent injuries to the other eye, which certainly stresses the fact that one-eyed persons should wear protective lenses. Blows from fists, sticks or similar objects are more dangerous than those from larger objects.

We feel that continued studies of this type will point out many other necessary crusades for safety and

TABLE V

Non-Occupational Eye Injuries by Type of Activity and Causative Agent*

Activity	Totals	Play	Household	Traffic
BB Shot	19	19	..	..
Fireworks	8	8	..	..
Firearms	82	77	5	..
Explosions	25	17	7	1
Sharp Objects	293	162	123	8
Blows or Falls	342	166	122	54
Chemical Burns	23	..	23	..
Heat Burns	40	4	36	..
Foreign Body	34	17	9	8
Not Specified	40	25	15	..
Total	906	495	340	71

* Three cases of birth injury and 15 during medical or surgical procedures are not included.

guide us in preventing suffering and visual loss from injury.

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ADVANCES IN PATHOLOGY

Spectacular advances in eye pathology have been stimulated by the electron microscope and other new methods of investigation, said Dr. Algernon B. Reese, president of the American Academy of Ophthalmology and Otolaryngology, in opening its meeting in Chicago in October, 1955. A generation ago, he remarked, pathology "languished as an esoteric subject comprehended by only a few." Since then it has grown by leaps and bounds.

Today there are many methods of studying ocular diseases: by the new specialty of analytical cytology, by fluorescent microscopy, by chemical analysis or tissue culture or centrifugation of cells, among others. In the last year or two a technique has been devised for examining very thin sections of tissue which has not yet been used in ophthalmology.

Dr. Reese said that most ophthalmologists had neither the time nor the specialized training to keep up with all these new techniques, and suggested that there should be full-time pathologists, at least in the large medical centers, equipped to carry out the new methods of analysis.

During the meeting a symposium was held on diseases of the optic nerve, especially optic neuritis. Despite the many recognized causes of this disease, Dr. C. Wilbur Rucker of Rochester, Minnesota said that a third of the cases were of unknown etiology, making treatment of them unsatisfactory. He discussed the incidence of optic neuritis in multiple sclerosis patients as running from 30 to 50 per cent. In the acute form the chance of regression is about one case in two, and in the chronic form there is less hope of improved vision, but spontaneous regression does occur. Dr. Rucker believed that ACTH and cortisone were not superior to other agents in treating optic neuritis, and should not be used as a routine remedy.

Dr. Frank D. Carroll of New York City mentioned congenital optic atrophy as a frequently overlooked cause of optic neuritis, and urged physicians to inquire into the family history of their patients for such eye diseases. He described an unfamiliar form of optic neuritis occurring among prisoners of war suffering prolonged malnutrition. Men who had been on a near-starvation diet for too long never recovered useful vision, he said, since there was nerve damage. Postmortems of 11 Canadian prisoners who returned home and died of unrelated diseases showed degeneration of the eye nerves in four and of the spinal cord in seven.

BRAILLE REPRINT OF EYE TERMS

As recently announced, a *Vocabulary of Terms Relating to the Eye* is available from NSPB (Pub. 172; price 10 cents).

This eight-page "dictionary" will also be published in Braille as a supplement to *The Home Teacher*. Persons interested in securing copies of the Braille reprint may address inquiries to Rowena H. Morse, editor, *The Home Teacher*, 88 St. Stephen Street, Boston, Mass.

UPGRADING EDUCATIONAL FACILITIES FOR CHILDREN WHO ARE PARTIALLY SEEING

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"Special education should help children to be normal, not different," says the author. "Let us emphasize the child, not his difference."*

FOR thirty-five years I have been actively engaged in the profession of education as a teacher, supervising principal and administrator at district and state levels. I have seen miraculous upgrading in our public school programs.

Thirty-five years ago almost any person willing to accept a teaching position could be so employed. He might be younger than some of his pupils, have no training beyond high school, and be equipped only with old clothing, a dinner pail and the physical ability to maintain discipline. In entering this educational abbey or convent he gave up every right to go to theatres, play cards, smoke, have dates or dress in any more up-to-date manner than the oldest member of the school board. Today teachers are professionally trained, legally certified to teach on the basis of extensive specialized training, accepted as socially important in the community and supervised by trained administrators. Today teachers have life certificates, degrees in education, tenure rights, retirement benefits. They can and do entertain Cupid and the stork.

In 1916 I graduated from high school in a class of 66 young people from 18 to 22 years of age. Last year the same high school graduated 598 youths with an average age of 17 years, one month.

The building in which I first taught was a two-story wooden structure. It was a fire hazard; it could not be properly heated or ventilated; each room had a single unshaded 40-watt light bulb hanging from the middle of the ceiling; the windows were not equipped with shades; the room below was disturbed by the movements of feet in the room above; there were no cloakrooms; playgrounds were dirt—or mud; lunch pails were set on radiators; mice scampered about; chalkboards were semi-black, grey, streaked, broken, rough, glazed and tricky on vision. Today the physical plant is an asset to community beautification, child mental health, teaching efficiency and professional pride.

I have seen schools upgraded by the addition of curricula extensions in agriculture, home economics, music, art, audio-visual aids, driver training and in many other areas. I have seen

* Presented at the Annual Conference of the National Society for the Prevention of Blindness, Chicago, Illinois, March 26, 1956.

the old collections of dilapidated volumes of Encyclopedia Britannica, Life of Garfield and The Great San Francisco Earthquake give way to wonderful libraries in every school, with appropriately selected volumes, supervised by trained librarians and enjoyed by eager youthful minds.

Advances in Special Education

During this long period I have seen the struggle in the schools to understand and deal better with the individual differences of children. This has resulted in tremendous advances in curriculum development. Compulsory school attendance laws have brought into our schools many children with great individual differences. Special education just had to get itself born. It has matured all too slowly, because it is more than an educational plan. Special education is also a medical device, a social development, a home aid; a civic club slogan; a private agency foster child; a crusade for pressure groups; a battleground for psychological interpretations; a fertile field for research and researchers; a challenge to social workers; a band wagon for some and a vehicle abandoned by others.

No subject today could be more important than that of upgrading educational facilities. In special education we have made great advances especially within the last decade or two. The leadership of conscientious professionally directed resources, like our national and state organizations for prevention of blindness and child-minded educators motivated by child interests and needs, is charting a clearly defined program. We need to pause and evaluate, and then press forward with objective vision.

Understanding Needs of Children

My purpose in this discussion is to give particular emphasis to the basic phase of this problem of upgrading educational facilities for exceptional children, including and stressing the partially seeing. These areas of upgrading may be pictured as plateaus.

First Plateau: Exceptional children are children. They are not handicapped children, or gifted children. They are children with handicaps or talents, or superior abilities. They are normal boys and girls. They have all the likes and dislikes, ambitions and fears, loves and hates, needs and problems that all children have. They want approval and recognition, they need physical and emotional security, and they are entitled to guidance and opportunity, the same as all children.

Since they are normal children with a difference, or a problem, they must first of all be recognized as normal—and then treated as normal. They are like Ivory Soap, 99.44 per cent pure normal. They must be educated like normal children. Special education facilities and services are to make it possible to keep them more normal in growth and in school progress.

We will all help the cause of these children if we stop referring to them as "partially seeing children." Let us call them "children who are partially seeing." Let us emphasize *the child*, and not his difference.

Special education should help these children to be normal and not different. Too many people today (including educators) think that teaching a blind child merely means giving him Braille, or that teaching a deaf child means giving him lip reading. The education of the exceptional child begins with

the idea of giving him a regular education. Then special education enters the picture with special facilities including a properly trained teacher to help him get a regular education, because he can be helped to do this in spite of his handicapping condition.

When schools fully realize this they will be able to cope with all of the problems of providing special classes or services; doing a lot for those children with handicaps even in districts where there are no special classes; and extending the services to those children whose handicaps are slight and who do not need a special class, but only special understanding and some special provision in the regular class.

Second Plateau: Children who are partially seeing are **normal children with a vision handicap.** They can be redheaded, blond or brunette. They can like candy and dislike spinach. They can have warm loving arms or bad dispositions. They can like or dislike school; they can come from poor or good homes. They are so very normal. They are shy, aggressive, delinquent; show-offs, lone wolves, good readers, poor spellers, big eaters; dimpled, toothless, popular, disliked and mischievous. Having an eye condition does not make them any less normal than having a homely face, a disagreeable egotism or an individual vanity.

Understanding children who are partially seeing begins with the person doing the understanding being able to evaluate himself. Is this person passing judgment without a handicap himself? Is he interested in children, or is he so interested in himself that he becomes a selector of children he likes and repudiates the others? Can he accept childhood—therefore all children?

The person working with children who are partially seeing must be sure of himself on three points: Does he really accept them as children—*acceptance?* Does he have something to offer each of them—*readiness?* Can he deal realistically with them and with himself—*objectivity?*

Third Plateau: What are the **states' opportunities** and **responsibilities** for the education of children who are partially seeing?

The constitution of every one of the 48 states answers this for all children. There is nowhere any law that says a child shall not receive this birthright because he is partially seeing. The whole pattern of our American democratic way of life is to provide for "all the children."

Since education is a state function and responsibility—and since local districts receive their authority from the legislature—it is important that each state furnish the legal pattern and basis for providing an educational opportunity for all children. All of the legislation providing for regular schools and for so-called normal children will benefit the child who is partially seeing; but to give him full opportunity despite his handicap, additional or special legislation is generally necessary. This should provide authority for local districts to establish necessary services; define the administrative pattern and responsibility for leadership; provide a plan for financing the service (with special state aid when it seems appropriate); give consultation and supervisory help in developing and conducting programs; and set standards for evaluating them.

The job has great complexities. Districts may be very large or very small; incidence will vary in different districts; related resources are abundant

in some communities and lacking in others; children who are partially seeing vary in age and grade levels, in degree of handicap, in having additional or multiple handicaps—social, physical, emotional, economic and educational. At the state level there must be an acceptable philosophy, leadership, planning and appropriate legislation.

Fourth Plateau: What are the responsibilities, opportunities and problems **at the local district level?** In Illinois the state has delegated to local districts the responsibility for furnishing educational opportunity to all of the children. Every square inch of land in Illinois is in a local school district. Every child lives in a public school district. There is no moral escape from the responsibility. The child who cannot see sufficiently to progress successfully in a regular class is denied his educational birthright opportunity to the degree that he cannot succeed—unless special facilities are provided to eliminate or decrease that area of lost opportunity.

Special classes, special services in regular classes, good medical diagnosis, adequate child study and guidance, itinerant professional help, integration of educational resources, adequate physical facilities, needed instructional supplies and equipment, individual planning, and proper placement are devices for bringing educational opportunity to children who are partially seeing.

There are problems of costs and excess costs, of interpretation to regular teachers, to parents, to the medical resources and to interested agencies. These are problems to be solved—not barriers to block effort.

Immediate and very careful efforts are necessary to locate all such children and to provide for them. In our state we point with pride and thanks to the Illinois Society for the Prevention of Blindness for doing the pioneer work of selling a philosophy and program to the schools. This society is the parent of special education for children who are partially seeing in Illinois. It has sponsored and pushed through our legislation. It made the surveys in local districts and sold the idea to local boards of education. It helped to establish appropriate standards; found teachers and saw that they were trained in this special field; helped get trained leadership in the Division for Exceptional Children of the Office of Public Instruction.

Today Illinois has 85 classes for children who are partially seeing, with 1,085 enrolled. But we estimate that there are about 2,000 eligible children not being served. I want to emphasize that by no means all of these are in areas where there are no special classes. In districts with special classes there are still enough of them that have not been placed to cause concern.

The parent must not abandon his child. The Illinois Society for the Prevention of Blindness must stay on the job. It must help get needed legislation so that adequate screening and finding of children is a continuous program. Or it needs again to consider furnishing services to do this job. It must keep at the task of working with the oculists and optometrists so that the schools' services are understood and children referred. There is still a great unmet need.

Districts need to explore possibilities of developing cooperative programs. This seems to be the only way

of developing needed special services in those areas where only one or two eligible children may be found in a single district.

It seems to me that as we think of local public school districts assuming their responsibility for the education of children who are partially seeing we need to take a direct, objective and fearless look at certain practices that might have been justified 25 years ago but which in the light of changing social, medical and educational philosophies need no longer be continued. As an individual educator trying to speak in terms of serving these children to their best interest, I think we have reached a point where special classes for children who are partially seeing in our residential schools for the blind cannot and should not longer be continued. It is my belief that all districts can better provide for these children at the local level. Building and lighting improvements, better quality books and printing, and the emphasis of schools on problems of individual differences have changed the whole picture.

No residential school can take the place of a home. The child's home is the first essential agency in good child growth and development. I have very grave fears in regard to the coexistence of special classes for the blind and the partially seeing in the same school. Their problems are different. Methods of teaching are different. A good program for the blind is probably handicapped by having children who are partially seeing in the same school. This is primarily a problem for local districts, not the residential schools, to correct. I would strongly recommend that every local district meet this problem at home, and no longer yield to the old easy practice of solving it by getting rid of the pupil.

A most important phase of upgrading programs is that of integration. The special room or service for children who are partially seeing is only at best a supplement to the regular school. It is easy for the regular teacher with a large class to reject the child who is partially seeing unless he realizes that the child belongs in his room—and only in the special room to the extent that the latter helps the child to use better the services of the regular room. The child is first considered and treated as a normal child. In the same way the special teacher must not become possessive of the child and feel that service to him is only a matter of special help. Securing this integration is a challenge to the administrative and supervisory leadership of the school building and of the district. If integration fails, segregation and coexistence result.

Fifth Plateau: The special education program for children who are partially seeing cannot succeed without close understanding and cooperation of the **medical and educational resources.** A complete understanding of the child's problem is dependent on medical diagnosis and counsel. Successful placement of the child, development of an appropriate program, and future planning are all directly proportionate to the relationship of the medical and educational resources.

Who shall take the initiative in this? It seems to me that since the problem is one of a child in school we can correctly think of the medical service as supplementary to the educational, which in the school situation is primary. Special teachers and building

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principals can be the key persons in bringing this about.

Some oculists or optometrists do not refer their patients for placement in a special class because they do not have a correct understanding of what the school is trying to do. Sometimes the teachers need more information or medical counsel in regard to a child. There are many justifications for building a close and understanding relationship.

Sixth Plateau: The teacher is **the most important person** in the educational development of a child. One who is partially seeing may have two or more teachers. Each is most important. Too often we allow the idea to develop that the child belongs to the special teacher. It will help all concerned if we reverse the emphasis and say "the teachers belong to the pupils."

Special teachers in this area of work have developed an understanding of their own problem much more completely than they have helped other teachers to develop a philosophy and understanding of it. We need to remember that the special teacher's responsibility is not just to the child. It is primarily to the service—the total service—of which his responsibility to the child is only a part. In self-evaluation, or in merit ratings, the special teacher should also be measured in terms of all relationships to building an acceptable program.

In Illinois we have found great strength in our programs for mentally handicapped children through good staffing of individual cases. This is a device through which various persons related to the child's program work together on problems of placement, curriculum, achievement, integration, etc. It could be just as meaningful for better service to children who are partially seeing if at intervals the special and regular teachers, the principal, the nurse, the psychologist and the social workers came together to evaluate problems and upgrade the service both for the individual and the class.

Recognition of the Special Teacher

Teachers are both born and made. In-service programs play a great part in the making of a teacher. The special teacher can feel very much alone at times. In a well supervised school, and in a program that is accepted and understood, he can feel very much a part of it. Good in-service programs motivate attending conferences and summer school for growth far beyond minimum standards. This leads to recognitions and honors that are the right of every teacher who responds beyond the specific calls of duty. Recognition days for teachers are as sound as recognition days for students. Recently a teacher whose spirit had begun to tire under years of arduous service told me that her whole attitude toward her work had changed, and her spiritual, emotional and mental health had been restored, because the other teachers had recognized her by electing her to represent them at a convention, and the board of education had contributed to her expenses on the trip. She decided she was appreciated and considered important. She told me that, much as she could use a salary increase, this recognition meant more to her than money.

In conclusion I should like to use an illustration that is stated in terms of the negative. The Great Textbook tells of three people: Peter, the exponent of the great denial; Judas, the exponent of the great betrayal; and

Pilate, the exponent of the policy of "washing one's hands of responsibility." These negatives of good characteristics point out three important concepts: Children who are partially seeing must not be denied their educational opportunity. They must not be betrayed by lack of understanding, acceptance or readiness to serve. And in America no representative of our public schools dare wash his hands of the responsibility.

COLORADO SCHOOL PROGRAM

A well-rounded program for the vision and hearing screening of school children has been prepared by the Colorado departments of education and public health and issued as a manual of suggestions and procedures. Although state law requires that all school children are to be given an annual vision test, various local conditions such as overcrowding make this impracticable. Accordingly it is suggested that at least grades 1, 3, 5, 7 and 10 be screened every year, and that all children new to the school or who show symptoms of eye troubles be tested from the other grades.

For screening, the standard and modified Snellen charts are recommended, with an optional plus sphere test for hyperopia. A test for color vision is urged for every pupil once in his school career. Full instructions for giving the tests, and for entering results on the child's cumulative health record are supplied, also the standard routines for referral after a second testing, and for follow-up procedures. The teacher is urged to refer all children who reveal a persistent visual difficulty, even if their Snellen results do not indicate anomalies.

HELPING JOHNNY TO READ

A team approach to the problem of difficulty in reading has proved fruitful at the Dyslexia Memorial Institute at the Northwestern University Medical Center in Chicago, which has greatly helped 85 per cent of more than 450 children so far treated. Dr. George E. Park, associate in ophthalmology at the university medical school, is president of the institute, and associated with him are pediatricians, psychologists and social workers.

The Illinois state department of welfare has recently donated a grant of $13,000 for research into the complex problem of dyslexia. A major objective of the institute is to learn more of the causative factors and to evaluate treatment procedures. From eight to 25 per cent of the American school population is retarded in reading, an estimated 3,500,000 children under age 15.

"Dyslexia can be prevented and can be corrected," Dr. Park said. "These children have normal, often superior, intelligence. There are many causes of their inability to read. Some are physical, and some are emotional. By studying each individual child and his particular problems we can prescribe the best treatment for him."

SCOTOPIA AND AGE

Dark adaptation decreases with increasing age, Drs. Ross A. McFarland and M. Bruce Fisher of Harvard University report in a recent issue of the *Journal of Gerontology*. For every increase of 13 years in age the intensity of illumination must be doubled to make a minimum threshold target visible to a fully dark-adapted eye. The speed of scotopia is lower for young and old than for those in middle life.

Upgrading Educational Facilities for Partially Seeing Children A Working Conference

A summary of two sessions held during the 1956 NSPB Annual Conference in Chicago.

Chairman: Mrs. Hazel C. McIntire, director, Division of Special Education, State Department of Education, Columbus, Ohio.

FIRST SESSION—MARCH 26

Participants: Dr. Frances Mullen, assistant superintendent of schools, Department of Special Education, Chicago, Illinois; Dr. Ray Graham, director of education of exceptional children, Illinois State Department of Public Instruction, Springfield; Mrs. Della A. Loviner, supervisor, Division of Special Education, State Department of Education, Columbus, Ohio; Dr. Earl H. Hanson, superintendent of schools, Rock Island, Illinois.

Discussion Leader: Helen Gibbons, Board of Education, Rockford, Illinois.

Recorder: Kathleen Heaton, Board of Education, Waukegan, Illinois.

DR. MULLEN welcomed the group to Chicago and extended an invitation to visit any of the city's 40 elementary or six secondary classes for the partially seeing.

The first speaker was Dr. Graham, whose paper precedes this report. He concluded with three important concepts: that children who are partially seeing must be given educational opportunity; that they must be understood; and that all representatives of public schools share this responsibility.

Dr. Hanson next discussed "Planning for Children" from a superintendent's point of view. He stated that the problem of relating educational content to the needs of children and to the demands of the community is getting more difficult. Moreover, he thinks that identification of the role of a superintendent with the problems of the partially seeing demands a person who has sympathy with their special needs, a warm acceptance of them, and the conviction that they should be taught to live normal lives with normal children.

Dr. Hanson feels that it is important for the superintendent to have a clear idea of the organization of the special education program and all its plans. He is convinced, after experimentation, that the present resource room and regular grade plan in his system is the most healthy since it does the job, avoids a "crippled complex" and better suits specialists, parents and student. He also feels that a superintendent has a difficult task in avoiding the overcrowding and limiting of regular class space while guarding the needs of the special class; that an important part of his job is to see that the school team works for and with the special program.

Dr. Hanson pointed out that a superintendent with the help of his principals can convince his faculties that special rooms represent an opportunity, not an imposition, if he shows them that by such means "the reach of all teachers is made longer." A superintendent, he said, has an important job also in interpreting the work of special classes to the community, the board of education, the parents, and the doctors, so that no feeling of "too much attention for the handicapped" ever develops. Moreover, it is he who must articulate the whole system of special education in his own system as well as with neighboring school districts which cannot provide special services.

Finally Dr. Hanson warned against a superintendent's making a "pet" of special classes. He must maintain a good balance, seeing that the special services occupy their proper place, that the plans are workable, the staff qualified, and that there is a sound interpretation to the entire community. It is important that the teachers in such programs be treated as are all other teachers, with the same privileges and duties, particularly in school and community activities.

Facts and Fallacies

Speaking on "Individual Differences among Partially Seeing Children," Mrs. Loviner briefly outlined the three types of programs and then reviewed several fallacies in our current thinking. She reminded us that although we were once taught that children lose vision through use this theory is now generally labelled incorrect. We have long known that many children who are partially seeing can comfortably read smaller than 24-point print, yet many continue to use it in special classes for all pupils. Children are accepted with only a distance vision report whereas it is equally important for partially seeing children to know the near vision.

A fact to be kept in mind, said Mrs. Loviner, is that most children with 20/70 in the better eye after correction can read at near point Jaeger 7- or 10-point print. Therefore, in school such a child does not differ from the normally visioned so far as near-point is concerned, although he may not be able to see the board from the back of the room. It follows that all such a student may need is an interpretation of his "needs" by the special teacher to the regular teacher. He could profit from the itinerant plan in which the special teacher checks on him periodically.

Mrs. Loviner described a child with 6/200 visual acuity, right eye, and glaucoma, left, who presents a different problem. Such a student can see 12-point type, but must hold it close, and he cannot read reduced print. With him time is a factor, since it takes him longer to read. This student needs help frequently from a special teacher. While partially seeing children may not need any special help in reading in first grade where 18-point type is used, they may need it at the fourth or sixth grade levels, which are the points of reduction of type size in our textbooks.

Questions and Answers

During the ensuing question period it was explained that the Near Vision Test Charts designed by Lebensohn, manufactured by E. B. Meyrowitz, 520 Fifth Avenue, New York 36, are available through most local optical companies. With regard to the opinion

of doctors about allowing children to use small type when they can do so comfortably, it was pointed out that eye specialists are usually more lenient on this score than teachers of the partially seeing.

Another question related to whether attention need be given to near vision in testing preschool children. It was pointed out that near vision is not usually tested since children have great accommodation.

There was concern that letting children use type they can barely see might lead to a fatigue which the student would not admit since he would be eager to complete his work. Mrs. Loviner said that time is a factor in the child's reading. When a near-vision test is made it is always wise to permit a child to use the line of type above that which he claims he can see comfortably. If a child does require a 24-point type, periodic help on the itinerant plan may not be sufficient for him and a student reader may be needed in such a case.

Miss Gibbons, an itinerant teacher, pointed out that often a teacher can serve more children under this plan since some of the children under discussion need not be seen frequently. Thus the special teacher has more opportunity to work with partially seeing children who may be of low mentality or who have other serious problems.

SECOND SESSION—MARCH 27

Participants: Doris B. DeSotell, Bardwell School, Aurora, Illinois; Grace Postlewait, principal, Humboldt School, Alton, Illinois; Edna Woodward, Louis M. Schiel School, Cincinnati, Ohio.

Discussion Leader: Etta Starkey, Humboldt School, Alton, Illinois.

Recorder: Mrs. Adelyn S. Park, Haven School, Evanston, Illinois.

Since the first session of the working conference dealt with planning, at the administrative level, for children with partial sight, the second session was concerned with plans for these children within the local schools attended.

Two different types of planning were discussed by Miss DeSotell and Miss Woodward, showing the same basic philosophy as well as the same teaching techniques. For example, it was stated that the class for partially seeing children is designed to permit them to achieve their capabilities to the fullest. There is no difference between the partially seeing child and the child with unimpaired vision except the degree of visual acuity. The curriculum for the child with limited vision approximates that which is provided for the child of normal vision. Efforts are made to integrate the partially seeing children into as many regular classes for learning as possible. The program is always kept flexible enough to take care of any necessary changes.

The regular grade teacher needs explanation of various aspects of work with partially seeing children. For example, can she cause loss of vision or damage to the child's eyes? The policy has always been to use the recommendations of the child's eye specialist as a yardstick and to consult the specialist when in doubt. This method leads to better understanding and tends to limit misunderstanding.

If the child is greatly retarded educationally because of his handicap then this lack of foundation must be

remedied before he is expected to complete regular grade assignments. The good work and study habits established in the special room should carry over into the regular room. The child should gain: self-direction and dependability; development of listening and hearing habits; recognition of symptoms of visual fatigue; knowledge of how to procure eye rest by change of eye activity at the proper time.

Three Types of Program

With changes in thinking and in the educational approach, work with children with partial sight began to undergo reorganization. There are now three different ways in which such programs may be planned:

First, the special class plan in which the child is enrolled with the special teacher arranging his work so that a portion of his time is spent in the regular grade; second, the plan enrolling the child in the regular grade and using the special room provided, with a specially trained teacher, as a resource room where the child receives all help needed due to his vision; and third, the itinerant teacher plan under which the child remains in his local school and the special teacher goes to him, working closely with his regular classroom teacher and spending needed time with him individually to keep him up to grade level.

Under any one of these plans the special teacher has the same responsibilities, namely:

1. *To the Parent*—The special teacher explains what the program provides for the child and how it is carried out. She gleans from the parent all information she can that will help her in meeting the child's particular needs. She may also need to help the parent understand the ophthalmologist's recommendations and the need for return visits whenever he deems it necessary; also that these return visits be reported to the special teacher in order that she may have full knowledge of the eye condition and be able to make adjustments in school work if needed. Home visits do much toward establishing valuable relationships.

2. *To the Principal*—When a new child has been enrolled the special teacher confers with the principal, explaining to him the child's visual problem, any special abilities or disabilities, the possible grade placement and how the child is to be transported. As soon after this conference as possible she introduces the child to the principal. Occasionally readjustments may be necessary, and these can be made more effectively when the principal knows the child's problems.

3. *To the Regular Classroom Teacher*—It is of prime importance that the special teacher give the regular room teacher all the information she has regarding the partially seeing child to be assigned to her. It is important that she explain the child's visual problem, his special abilities, limitations, and mental status, so that he may work successfully with the group, and earn acceptance by them, as well as accept himself as a worthy individual. The special teacher confers regularly with her and prepares any necessary materials in advance. In fact, she offers any assistance which will further promote the comfortable adjustment of the child within the group.

4. *To the Partially Seeing Child*—The resource room should provide good visual environment and reflect good

emotional tone. With the special materials offered, such as large-type books, large-type typewriters, pencils, chalk, paper, special desks, maps and recorders, the child has every opportunity to plan, organize, create and explore further the subjects studied in the regular room, so that he is able to participate and contribute in his group activities. Although the same techniques and teaching methods used are those of any good teaching, the special teacher, with her additional special training, is able to adapt the child's work to his visual needs, to provide an atmosphere free from tension, to minimize his handicap—in short, to develop a happy, self-sufficient, contributing member of society.

Understanding the Child

One noticeable thread running through both meetings was the importance of a genuine acceptance and understanding of the child with partial sight, if a service were to be successful. Therefore it was important to hear from Miss Postlewait, a principal having such a program in her building. She explained that this program is not in its youth but has been functioning since 1937. Like most special education classes, it had its problems in the beginning. However, many hurdles were overcome and real progress has been made.

These children succeed because of their abilities and in spite of their disabilities. Miss Postlewait thinks, and all the group appeared to agree, that the education of children includes not only mental but moral, emotional and social growth and development of the child as well. She feels very definitely that an integrated program is essential and basically good for partially seeing boys and girls. It is well sometimes to stop long enough to clarify terms. When "integration" is considered it means to form into a whole, or unite or become united so as to form a complete whole. This is exactly what is striven for in the work with handicapped boys and girls. They may be physically handicapped—that the educator has no jurisdiction over—but how to prevent them from growing mentally handicapped as well is the teacher's major problem to think about and, further, to do something about.

Whenever possible, a child with a visual handicap should be integrated into the regular classroom—at first on a temporary basis along with very close cooperation between the special teacher and the regular classroom teacher. Miss Postlewait's school uses the regular classroom plan in which the child is enrolled in a regular room and then goes to the special room for the help he needs in reading and visual problems. This program implies daily cooperation of teachers and a constant sharing of information. As to the regular classroom teacher, she must realize her job is *letting* the handicapped child be normal instead of *making* him normal. Also important is the regular teacher's feeling about the handicapped child because it is her belief that the teacher's feeling is the most contagious factor in the child's life. If the regular teacher accepts him, soon all his associates accept him, but most of all—the child accepts himself.

Planning Together

A few days in advance of the opening of school the special teacher and Miss Postlewait have a conference and make plans with those teachers

who will share in this integrated program. One thing they always emphasize to the regular classroom teacher is that if the children from the partially seeing group demand too much attention, to the extent of robbing the regular class pupils, something else will have to be done.

This type of program has been carried on for the past five years. They ventured into it slowly and cautiously, Miss Postlewait said, by sending certain children into the regular classrooms for music, art and physical education. How well she remembers when she and the special teacher met with a couple of other teachers one noon to discuss briefly their plans for a more intensive integrated program with the regular classroom children. They found it not a selling job, as one might expect; their thinking was immediately accepted, and ideas were added. Now teachers and parents, too, are sold on this kind of program. These "integrated children" immediately experience the feeling of belonging to a new social group. Teachers soon observe changes of facial expression, real pal development; after that, participation in games—in other words, a complete new social outlook.

Actually, the philosophy in this profession in which we are engaged is to do what is best for the growth of children, whether the teachers are labeled "special" or "regular classroom." Regardless, they have the same responsibilities toward their work. They must all share alike in such activities as cafeteria and hall duties. When special programs are to be presented at P.T.A. meetings, mothers' clubs and music festivals, again they respond on an equal basis. Why shouldn't they? Miss Postlewait's philosophy, as principal, is to do whatever she thinks best for the growth and development of teachers. She expects those who show ability and can serve best, regardless of special or regular teacher classification, to represent the school on any occasion where special contributions are to be made or where special recognitions are given.

It is always her desire to participate in as many parent-teacher conferences as possible. This holds true for the special teacher as well as for the regular classroom teacher for it promotes better understanding and creates a more united school program.

All children who are integrated into the regular classroom are happy and those who have the mental capacity do good work. But why shouldn't they be happy—spending most of the day in a room of boys and girls of their own age level and interests instead of in one with 15 pupils varying from first grade through sixth?

In closing, Miss Postlewait emphasized that she feels, and she believes others share the feeling, that all who have responsibility should put forth every effort to minimize children's visual handicaps and emphasize their assets and abilities so *all* can develop as they would have developed had they not had an eye condition.

EENT CLINIC IN ALASKA

The Alaska Native Health Service Hospital in Anchorage has opened the first clinic for eye, ear, nose and throat ailments among the Eskimos. The new department will serve both inpatients and outpatients, and will be directed by Dr. Milo H. Fritz, president of the Alaska Territorial Medical Association.

NOTES AND COMMENT

• Ford Grants To Hospitals

Several hospitals which specialize in ophthalmic work have received their first checks from the 200 million grant by the Ford Foundation for improving and expanding hospital services. The 3,500 privately supported nonprofit hospitals in the program receive half their allotment this year and the rest in 1957.

The Massachusetts Eye and Ear Infirmary has received $38,000 as half its grant, the New York Eye and Ear Infirmary $31,900, and the Wills Eye Hospital of Philadelphia $42,750. The Presbyterian Eye, Ear and Throat Hospital of Baltimore received $5,000 and the Memphis Eye, Ear, Nose & Throat Hospital $13,850. The University of Chicago Clinics, which include much ophthalmic work in their services, were granted $125,000 for 1956. The amount of each grant was determined on the basis of patient days of service.

• Connecticut Developments

In several areas of Connecticut the parents of children blinded by retrolental fibroplasia have formed Guilds for the Visually Handicapped for mutual help in obtaining better conditions for their children. They have sponsored legislation which makes it possible for blind children to be integrated into the public schools near their homes.

The 1955 digest of administrative reports to the Governor states that Connecticut now pays from $1,400 to $1,600 annually for the education of each blind child. During the last decade 224 children in the state have been blinded by RLF. In May 1955 the Department of Health sent a circular letter to all physicians and to the administrators of maternity hospitals recommending restriction of oxygen given premature babies.

The Board of Education of the Blind is placing increased emphasis on preventive work, providing eye examinations, treatment, surgery and glasses for hundreds of children and adults. A survey of 1,700 persons with subnormal vision revealed that from 10 to 15 per cent might obtain useful vision from aids such as telescopic magnifying lenses. The remedial program for persons with low visual acuity is being expanded.

• Glaucoma Detection in N. J.

The second annual screening for glaucoma in New Jersey was held in September 1955 during "Glaucoma Detection Week" proclaimed by Governor Meyner. The eye health service of the Commission for the Blind sponsored the survey with the cooperation of the State Medical Society and the New Jersey Ophthalmological Society. The 46 hospitals with eye clinics gave their facilities, the ophthalmologists contributed their time, and the school nurses played an important role by publicizing the opportunity for a free examination. Of the 3,125 persons examined, 129 were diagnosed as positive cases, and 178 others were classified as suspects.

• Glaucoma Follow-up

A follow-up service to patients with glaucoma has been added to the routine duties of the public health nurses in Pinellas County, Florida. The program is described in *Nursing Outlook*

for January, 1956 as an extension of county health department work for the control of chronic diseases. It began in 1953 in cooperation with the Florida Council for the Blind.

Pinellas County, which includes St. Petersburg, has a large number of older people and thus a relatively high incidence of glaucoma. In order to give these patients the sort of care which cuts down the risk of blindness, the public health nurses are given a special course in glaucoma, with an annual refresher to keep them abreast of new developments in the prevention, management and control of the disease.

The Council for the Blind sends information to the health department of any glaucoma patient needing supervision, and a district nurse then visits the patient twice yearly, and oftener if necessary. She checks on a 12-point regimen for general health habits and for keeping the eye disease under control, and makes sure that the patient follows his oculist's instructions and consults him at stated intervals. This service takes a small amount of nursing time and represents a valuable protection to individuals tempted to neglect precautions against progressive blindness.

• Menace of Rubella

Women who contract German measles during the first trimester of pregnancy are in such danger of bearing a sadly defective child that they should not allow the pregnancy to continue, Sir Norman Gregg of Sydney, Australia declared at the annual meeting of the American Academy of Ophthalmology and Otolaryngology held in Chicago in October 1955. Sir Norman, an ophthalmologist, was the first to trace an association between maternal rubella and congenital anomalies in the child. In 1940 there was a heavy epidemic of rubella in Australia, and a few months later he saw so many babies with congenital cataracts and other eye defects that he became convinced of the connection.

Since eye defects, deaf-mutism, abnormal hearts and mental retardation belong to the rubella syndrome, methods of prevention other than therapeutic abortion are being sought. One solution would be to have women contract the disease before pregnancy, either by contagion or by injection of a vaccine. The latter method will improve when work on cultivation of the virus is completed. A third experiment has been tried in Sydney since 1949: protecting the expectant mother who has been exposed to rubella by convalescent serum or gamma globulin. There has been enough encouragement to justify continuing the experiment.

Sir Norman discounted the notion that very light cases of German measles differ from the type which injures the unborn child. He declared that all cases of measles should be reportable.

RECORD AT BETHLEHEM STEEL

In its 1955 annual report Bethlehem Steel Corporation devotes a page to figures showing a new all-time low in company accident rates. After declining almost continuously since 1916, the 1955 injury rate was down 92 per cent. The decrease is attributed to safety education, use of personal protective equipment and elimination of industrial hazards.

Outstanding for its safety record among Bethlehem operations is the Pottstown Works where the last disabling eye injury occurred in April 1937.

AROUND THE WORLD

CZECHOSLOVAKIA

Blindness in Prague. Accidents were the chief cause of blindness in a group of 771 studied in the capital, accounting for 13 per cent. Senile cataract for which surgery had been refused had blinded two per cent, and glaucoma four. The percentages for the chief blinding diseases were: uveitis, and serious or complicated myopia, 11; optic atrophy, 9; congenital cataract, and tapetoretinal degeneration, 8; ophthalmia neonatorum, 6; anophthalmos or microphthalmia, 4; and hydrophthalmia, 4. Trachoma had caused only 0.26 per cent of the blindness in this group.

GREAT BRITAIN

Night Blindness in RAF. Complete temporary night blindness resulted from flying at high altitudes without oxygen, according to the official report, *The Royal Air Force Medical Services*, just issued, and quoted by *The Optician* (London). Pilots reaching an altitude of 6,000 feet without oxygen found their visual acuity reduced by one-fifth to one-tenth of normal, and this loss increased with altitude. The medical branch of the RAF recommends that all air crews flying at night should use oxygen throughout the flight.

Eye Banks Around the World. Changes in laws and in popular prejudice are making the establishment of eye banks possible in one country after the other, according to a report in *The Optician* (London) for January 27, 1956. A donor eye should be removed soon after death, but in most countries it has been illegal to remove tissue from a cadaver until some time has elapsed.

In England the old Anatomy Act of 1832 decreed that a body was a *res nullius*, belonging to no one, and the bequeathing of eyes was illegal. Since the Corneal Grafting Act of 1952 enabled people to will their eyes to give sight to others several eye banks have been established, but donated corneas are still insufficient for the needs.

In Sweden, Italy, the Middle East and Venezuela there are still restrictive laws, and in France keratoplasty was outlawed until recently. Both France and Spain now have national eye banks. In Holland the Red Cross collects donor material for five centers for corneal transplants. Czechoslovakia, Austria, Hungary and Yugoslavia have no legal obstacles to eye donation. New Zealand has one eye bank and Argentina two; India has banks at Madras and Aligarh, United Provinces, which supply only a fraction of the tissue needed.

Tunis and Morocco have authorized the removal of cadaver eyes in certain hospitals, and in South Africa the superintendent of a hospital may donate eyes from dead patients if their relatives consent.

HAWAII

Plantations Safeguard Eyes. Eye injuries in the sugar and pineapple industries have been greatly reduced since the introduction of a comprehensive safety system on the plantations. Dr. W. J. Holmes of Honolulu, in an article in *Industrial Medicine and Surgery* for February 1956, describes the cooperation of management and labor in the modern program supervised by the Territorial Association of Plantation Physicians, which has re-

duced eye accidents to a half or a third of the number a few years ago, and almost eliminated disabling ones.

In the engineering phase of the program each job and operation was surveyed and the hazards estimated. The leaves of sugar cane and the pineapple fruit have thorny edges and taper in sharp pointed ends, making cane cutting and the planting and picking of pineapple dangerous to the eyes. The application of fertilizers by airplane or tractor and the wearing of approved eye protection greatly reduced the number of ocular mishaps. In the canneries fluorescent lighting and the new color symbols for hazards have been adopted, and all possible dangerous operations have been transferred to closed-circuit mechanical systems.

Chemical hazards are dealt with by modern procedures. Substitutes are used for dangerous insecticides and weed-killers wherever possible, and precautions are taken against pineapple by-products, bromelain and citric acid, which may cause a mild conjunctivitis.

ITALY

Shipyard Conjunctivitis. Analysis of the 1953–1954 epidemic of keratoconjunctivitis in the Ansaldo naval shipyards of Genoa appears in a recent number of the *Rassegna Italiana d'Ottalmologia*. Dr. Giovanni Cucco of the Eye Clinic of the University of Genoa compares this epidemic with similar ones in other countries, concluding that the same clinical entity was involved, though with wide variations in symptoms.

In the Ansaldo shipyards 300 of 5,000 workers (six per cent) were affected as compared with four per cent in the epidemic of shipyard conjunctivitis in the United States in 1942. About 30 per cent of the Genoa patients had corneal involvement, as against 60 per cent in a French epidemic and 85 per cent in the American one. Beginning as an acute follicular conjunctivitis, the inflammation cleared up in two or three weeks, but the corneal lesions lasted months or in some cases more than a year.

The virus was isolated, and Dr. Cucco's studies led him to question the supposed identity of this virus and the herpetic one which many observers have believed to be the etiological factor in epidemic keratoconjunctivitis.

MEXICO

Clinics Will Repeat. Because of the great enthusiasm generated by the postconvention tour of Mexican clinics in 1955 by members of the American Academy of Ophthalmology and Otolaryngology the tour will be repeated after the Chicago convention in October 1956. As before, five hospitals in Mexico City will hold special surgical clinics for the American guests. Travel arrangements can be made through Mr. Leon Arnold, Holley Chambers, 33 Washington Square West, New York 11, New York.

PHILIPPINES

Anniversary Celebrated. The tenth anniversary of the Philippine Ophthalmological and Otolaryngological Society was celebrated in Manila with a three-day meeting late in November, 1955. Surgical clinics were held in four hospitals, and the first José Rizal Memorial Lecture in Ophthalmology was delivered at one of the scientific meetings by Dr. Edmundo Reyes, whose subject was the psychosomatic factors in visual perception.

CURRENT ARTICLES

Retrolental Fibroplasia: Influence of Reduced Electrolyte Intake on the Incidence and Severity of the Disease. R. Hepner, M. C. Fletcher, M. M. Desmond, H. Hunt, and S. Brandon. *The Journal of Pediatrics*, Vol. 48, p. 34. January 1956.

A study was made of 142 premature infants in five Houston hospitals in 1952–1953 to determine a possible connection between electrolyte intake and the incidence of retrolental fibroplasia. It was suspected that the high mineral content of cow's milk overloaded the metabolic capacities of some premature babies, producing edema and vascular disturbances which might conduce to RLF.

In three private hospitals half the infants were given their own mother's milk and the other half various proprietary formulas with a higher mineral content. The infants in two large hospitals were similarly paired off by weight, sex, and color, one in each pair receiving a low electrolyte formula and the other a formula higher in mineral content.

No significant difference in the incidence or the severity of RLF was found between the two groups. In 78 babies fed the low electrolyte formula, 28, or 36 per cent, developed RLF, which in 11 cases was severe (active stages III to V). In 64 infants of similar birth weight fed the higher electrolyte formula 24, or 37 per cent, had RLF classed as severe in 13 cases.

A previously reported racial contrast was again noted. Incidence of RLF among the white infants was markedly higher than among the Negro children, explained by the greater maturity of their vascular eye structures as compared to white infants of similar birth weight and gestational age.

Retrolental Fibroplasia: Role of Oxygen. Report of the Sixteenth M & R Pediatric Research Conference, held in New York City, January 18, 1955.

A symposium by pediatricians and specialists in various fields of medicine discussed clinical and experimental findings on RLF as related to oxygen. Dr. V. E. Kinsey reported the data for the first six months of the National Cooperative Study by hospitals distributed through the country. A group of 53 infants receiving oxygen at a concentration over 50 per cent for 28 days or more showed an incidence of 72 per cent with some degree of RLF. Contrasted with this group under routine therapy were 245 infants given oxygen below 50 per cent for a mean of four days. The incidence of RLF in this group was 30 per cent. The study showed that the incidence of this disease almost doubled for each additional two days in oxygen.

Dr. Mary Fletcher reported a study of 462 premature infants with particular reference to the maturity of the fundus which showed a direct correlation between birth weight and incidence of RLF.

Dr. Arnall Patz reported that experimental lesions in several species of young animals were directly proportional to the concentration and duration of oxygen exposure, and were limited to the eyes. The excessive sensitivity of the visual cells was empha-

sized by Dr. Werner Noell, whose studies with adult rabbits showed that the visual cells were destroyed by exposure to 55 per cent oxygen for six or seven days, and by 80 per cent oxygen in four days.

Endocrine factors in the induction of oxygen toxicity were discussed by Dr. John W. Bean, who said that young rats and chicks exposed to high oxygen pressures showed decreased growth, permanent motor disabilities, and altered visual function. The vasculature of the retina, in reality an extension of cerebral structures, is subject to alterations in oxygen. Other papers dealt with the biochemical effects of oxygen on the eye structures.

The Prevention of Retrolental Fibroplasia. J. C. Locke. Editorial. *Canadian Medical Association Journal*, Vol. 73, p. 480. 1955.

It is extremely important that the newly acquired knowledge of the cause and prevention of retrolental fibroplasia be disseminated as quickly as possible. Most Canadian physicians are aware that the blinding disease is caused by the excessive administration of oxygen to premature babies, but certain practical points require emphasis. Modern incubators are becoming more numerous, increasing opportunities for creating the disease.

The recommended rules for controlling oxygen therapy are listed, ending with the suggestion that the nursing staff should be given the necessary training and authority to reduce oxygen when it is apparent that the baby can get along with less.

The conviction of Dr. Jonathan T. Lanman that RLF can be eliminated is borne out by mounting evidence at the Royal Victoria Hospital, Montreal, that complete prevention through proper control of oxygen is an entirely attainable goal.

The Possibility of Total Elimination of Retrolental Fibroplasia by Oxygen Restriction. L. P. Guy, J. T. Lanman and J. Dancis. *Pediatrics*, Vol. 17, p. 247. February 1956.

During the last two-and-a-half years no cicatricial retrolental fibroplasia has occurred in any of the 148 infants given severely limited oxygen therapy in the premature infant nursery of Bellevue Hospital. The authors believe that with oxygen control RLF may be almost eliminated.

The 148 babies weighed less than 2,000 gm., and the regimens discussed were in the period between August 1952 and January 1955. During the last year of that period infants were given, when absolutely necessary, oxygen at a mean concentration of 30 per cent. Some of the babies had been in other hospitals for as long as a week before admission to the Bellevue unit, and the amount of oxygen they had received was not known exactly. Therefore analysis was confined to 81 babies admitted to the nursery when less than 12 hours old.

Three of these infants developed vascular stage lesions which regressed to normal. If the 81 cases analyzed were extended indefinitely, the expected incidence of cicatricial RLF would be between 0 and 4.4 per cent. The low incidence of reversible vascular stage lesions indicates that the expected incidence of cicatricial RLF lies near the zero end of the confidence limits. During the controlled study a group of 36 babies who received large amounts of oxygen showed 22 per cent

with cicatricial RLF and 61 per cent with vascular stage lesions.

Mortality was higher among the babies under restricted oxygen than among those under high oxygen, but the difference was not statistically significant. In the 46 infants weighing between 1,500 and 2,000 gms. at birth mortality was 20 per cent, as compared with a 10.5 per cent rate for this weight group during the seven previous years under high oxygen. A variation of this magnitude could occur by chance more than five per cent of the time. While oxygen restriction or unknown factors may be connected with the mortality incidence, the authors believe this unlikely in the case of oxygen. The group with the highest birth weight and the least need for oxygen showed the greatest rise in mortality, and two other studies have failed to show a rise in mortality with a restriction of oxygen.

Prophylaxis in the Eyes of Newborn Infants: A Comparison of Silver Nitrate and Erythromycin. H. E. Wachter and M. M. Pennoyer. *Missouri Medicine*, Vol. 53, p. 187. March 1956.

Because of the side effects of silver nitrate prophylaxis in the eyes of newborn babies, the St. Louis Pediatric Society and the St. Louis Gynecological Society undertook a study of an alternative preparation. With the permission of the city and state health authorities, the project was begun early in 1953 in five teaching hospitals.

Though penicillin ointment had been reported by others as effective and nonirritating, the state health authorities were anxious to find a substitute which could safely be used in home deliveries, and which was effective against gram-positive organisms as well as the gonococcus. Erythromycin ophthalmic ointment was chosen and was reported to be effective up to the limit of the 15 month dating, it required no refrigeration, and the delivery room personnel found it easier and quicker to use than the silver nitrate solution. A half-inch strip from the tube was placed in the conjunctival sac of the infant's eyes without subsequent irrigation.

A total of 12,599 babies born between March 1953 and June 1954 were included in the study, 5,489 receiving 1 per cent silver nitrate and 7,110 erythromycin. In the entire group no case of gonorrheal ophthalmia developed in the hospitals or after discharge. The state and city records were checked to make sure that no cases developed after the infants were sent home.

In the first phase of the study 2,333 babies born in the spring of 1953 were kept under close observation for seven days after birth. Silver nitrate produced two and a half times as many conjunctival reactions as erythromycin, and much severer ones. Of the 1,262 infants treated with erythromycin, 8.5 per cent had redness and swelling, 2 per cent had redness, swelling and discharge, and .08 per cent had redness, swelling and a copious purulent discharge. The corresponding percentages for 1,071 receiving silver nitrate were 21, 10 and 1.0.

The reactions to the drugs were not similar in character. That following silver nitrate developed within 12 to 36 hours after birth and was plainly the result of chemical trauma. Reactions to the antibiotic were apt to appear on the third or fourth day and

seemed to resemble a contact dermatitis of the lids.

Myopia Caused by Prematurity. H. L. Birge. *American Journal of Ophthalmology*, Vol. 41, p. 292. February 1956.

Seven cases are reported of myopia in prematurely born children who had a reversible form of retrolental fibroplasia. This type of myopia does not resemble the common forms, and is remarkable in that it does not progress after its initial occurrence. If diagnosed and treated early enough, many children recover useful vision after a minimum of five years. The exceptions are those with complicating factors such as brain injury from birth trauma, congenital cerebral deficiency, or nystagmus.

The author did not see these children during oxygen treatment in the hospital, but tried to verify the amount of oxygen received in each case. Prematurely born children often show a severe degree of myopia, perhaps 10 or 11 diopters, when first discovered at an early age, but it may not progress for the next decade. It may be associated with strabismus, nystagmus and optic atrophy, in contrast with the complications of malignant myopia (cataracts, detachments and choroiditis).

The seven cases reported include some followed for 14 years. All except one had vision after correction of at least 20/30 in the better eye. On the whole the prognosis for this type of myopia seems good; the eye, though severely affected by oxygen, proceeds to strengthen and to overcome its deficiency. These babies were treated with glasses at the age of one or two years, half the total correction at first, then the full correction if necessary. Some of the children required special educational facilities at first, but their vision improved enough by the fourth grade so that they could enter the regular classes.

Congenital Toxoplasmosis. H. A. Pearson. *United States Armed Forces Medical Journal*, Vol. 7, p. 278. February 1956.

A nine-year-old girl was referred to the U. S. Naval Hospital at Bethesda, Maryland, for evaluation of blindness and retardation. Examination revealed the typical findings of congenital toxoplasmosis: chorioretinitis, internal hydrocephalus, and intracranial calcifications. The eyes showed bilateral wandering motions, but not true nystagmus; the pupils did not react to light. Funduscopy showed normal vessels and most of the retina was of normal color. The optic disks were dead white, showing optic atrophy. In the macular region of both eyes were white punched-out areas showing punctate pigment deposits.

The infant was considered totally blind, and during the hospital course it was concluded that the disease was inactive and that no chemotherapy or surgery was indicated.

The mother had a normal four-year-old son, and her pregnancy was uneventful except for a few weeks during the second trimester, when she had muscle aches and cramps and general malaise. It is characteristic of congenital toxoplasmosis that it produces few or no symptoms in the mother but has a devastating effect on the fetus, attacking the brain and eye first, and in some cases the heart and muscles later. Funduscopy is valuable in diagnosing this rare disease.

Eye Health for Teen-Agers. F. M. Foote and B. B. Downing. *Journal of Health—Physical Education—Recreation*, Vol. 26, p. 14. December 1955.

During adolescence there frequently occur eye changes resulting in reduced visual acuity at the period when school work greatly increases its demands for good vision. Thus more attention should be paid to the detection and follow-up of eye problems in teen-agers. An alert teacher can often note indications of myopia and other troubles in the classroom, but an annual screening test should be routine.

The Snellen test for visual acuity and the Massachusetts Vision Test battery have proved to have the highest correlation with professional findings. The Snellen test can be given by a teacher who has proper preparation, but the follow-up procedures are usually in the hands of the school nurse, who should have a full report from the specialist consulted by the student.

The visual environment of the school—lighting, color, and avoidance of glare and too much contrast—are important factors in eye comfort and efficiency. High-school students should learn how to protect their eyes from mechanical hazards, and should know emergency first aid procedures.

Ridley Lens Implant: Case Report. C. B. Flinn. Paper Presented at Annual Meeting of the Louisiana State Medical Society, May 4, 1955. Discussion by G. M. Haik. *The Journal of the Louisiana State Medical Society*, Vol. 107, p. 374. September 1955.

A Ridley lens implant was made in the right eye of a woman of 75 following cataract extraction. There was an immature cataract in the left eye, and vision of 20/100, Jaeger 14 at six inches. The mature cataract in the right eye was removed on October 22, 1953 by standard extracapsular technique, and the acrylic lens was teased into position.

When the sutures were removed November 4 an iritis plus pigment and cellular deposits on the acrylic lens were noted. On December 16 the pupil was so nearly occluded that a Zeigler knife was introduced and the lens was scraped. By May 5, 1954 the eye was quiet though pigment deposits remained on the lens and a few keratitic precipitates appeared on the corneal epithelium. With a plus 1.00 sphere combined with a minus 3.50 cylinder axis 110, vision was 20/30 plus.

Though the patient is happy with the present acuity, the operation was made at great risk to gain a very small advantage. The patient's reaction was clearly a combination of lens material and foreign body reaction. The unusual amount and axis of the astigmatism may have been partly due to a tilting of the acrylic lens, though by microscopic examination it appeared perfectly placed.

Dr. Haik commented that Ridley's recent report on 140 cases might seem to prove the value and safety of his procedure, but the speaker remained unconvinced. He still agreed with Dr. Vail that despite Ridley's remarkably successful run of cases his implant was still an operation "of considerable recklessness," and the hazards far exceeded the little to be gained in ocular comfort and binocular vision. Ridley's own experience proved that intracapsular extraction could not be used successfully with his lens implantation, but by the extracapsular method

he has evidently met few postoperative complications. However, Dr. Vail's policy is sound, for patients can have no true conception of the real hazards of the Ridley technique.

Extracapsular Delivery and Vitreous Loss in Extraction of Senile Cataracts. M. D. Pearlman. *The Eye, Ear, Nose and Throat Monthly*, Vol. 35, p. 43. January 1956.

Various factors in unintentional extracapsular delivery and vitreous loss during extraction of uncomplicated senile cataracts were studied in 1,337 cases at the Illinois Eye and Ear Infirmary. The average rate of broken capsules was 24 per cent, and of vitreous loss 4.6 per cent, running from 1.7 per cent with intentional extracapsular delivery to 10 per cent with last-minute but complete extraction of a ruptured capsule.

The Bell erisophake as compared with the lens forceps had no influence on vitreous loss, but had about half as many capsule ruptures as the forceps. The round pupil method showed similar results, with a percentage of 16 ruptures as against 28 for keyhole or full iridectomy procedures. Hyaluronidase with the O'Brien type of akinesia had been associated with the lowest rate of vitreous loss in 646 previously reported cases, but this enzyme added to the retrobulbar anesthetic did not influence the rate of vitreous loss.

Postoperative complications were followed by the out-patient clinic for periods from one to 36 months. The development of secondary pupillary membrane sufficient to hamper vision occurred in 4 per cent of deliveries with the Bell erisophake, and in 15 per cent with forceps delivery. Uveitis developed in 8 per cent of the intracapsular series against 15 per cent of the extracapsular, and if there was vitreous loss the percentages of uveitis were 19 and 50.

Behaviour Disturbances Related to Cataract Extraction. R. S. Coles and L. Linn. *The Eye, Ear, Nose and Throat Monthly.* Vol. 35, p. 111. February 1956.

Bizarre behavior following cataract surgery is evidently more common than has been estimated. Of 21 patients at the Mount Sinai Hospital, New York City, who were observed on a 24-hour basis all but one exhibited post-surgical disturbances, and in 13 the reactions were markedly abnormal.

A sodium amytal test and EEG studies performed on each patient before surgery indicated organic brain disease in 18, and the authors feel this suggests that senile cataract is a manifestation of a general degenerative process. The abnormal reactions following cataract extraction were believed to be partly due to patching, which made it difficult for the patient to orient himself.

Since patients after cataract surgery have been known to injure themselves gravely or commit suicide, and since the lengthened life-span will increase the number of cataract patients, certain procedures are suggested to obviate postoperative complications. The surgeon might evaluate the patient before the operation by taking his history, by a period of experimental occlusion, and by the EEG and sodium amytal tests. If he seems likely to become psychotic after surgery, the surgeon might use from four to six corneo-scleral sutures to secure the

wound, making it safe to leave the unoperated eye unpatched.

Adequate nursing attention, the presence of friends and relatives, and early sitting up in a chair and ambulation should help the patient. Sedation should be used sparingly, and the barbiturates omitted wherever possible. Thorazine is the drug of choice following cataract surgery.

Some Causes of Enucleation after Cataract Extraction. B. F. Payne, J. T. Simonton and D. Cury. *Transactions of the American Ophthalmological Society*, 1955. Vol. 53, p. 231.

Uveitis and uveitis with secondary glaucoma were the causes of enucleation in 205 eyes of 333 consigned to the Eno Laboratory of the New York Eye and Ear Infirmary from 1930 to 1954 inclusive. These specimens followed surgery for cataract; congenital and traumatic types of cataract were excluded.

Uveitis with secondary glaucoma occurred in 151 eyes, and 82 of this group also showed retinal detachments. Uveitis occurred in 54 eyes. Invasion of the anterior chamber by epithelium appeared in 60 eyes, and this complication is on the increase. During the first 12 years of the period covered only three per cent of the specimens showed these downgrowths, but during the last five years 25 per cent were affected.

Sympathetic ophthalmitis appeared in 20 reports, only two of the cases during the last five years. Endophthalmitis was given as the cause of enucleation in 19 cases and expulsive hemorrhage in 12. In 11 eyes intraocular tumor was noted; only four of these had been tentatively so diagnosed before operation.

Diabetes mellitus, hypertension and psychoses were concurrent diseases in only a few cases. Enucleations reached a peak at about the age of 70, then sharply declined. Most of the eyes had undergone lens extraction by the extracapsular method. Several typical cases are described.

Organization and Planning of an Eye Section in a Private General Hospital. I. A. Abrahamson, Sr. and I. A. Abrahamson, Jr. *The Eye, Ear, Nose and Throat Monthly*, Vol. 34, p. 812. December 1955.

Due to the crowded conditions in many hospitals patients undergoing eye surgery are often assigned to rooms or wards where the necessary conditions of quiet are lacking. Often they are scattered over several floors in the care of personnel with no specialized training in the care of eye patients.

Eye-operated patients require closer observation than do other postoperative patients, if complications are to be avoided. The most dangerous period is three or four hours after the operation, when sedation or anesthetic has begun to wear off. A patient may leave the operating table with an eye in good order, and develop complications by waking in confusion and trying to get out of bed or remove the dressing from his eye.

A special section for hospitalized eye patients makes it possible to keep them under constant observation. A plan is presented for a unit of six glass-fronted cubicles giving on the corridor where the nurse is stationed. By means of reflecting mirrors she would be able to watch all six patients without moving from her desk. Architect's sketches are included.

The Importance of Glaucoma with Increasing Age. C. Berens and A. S. Breakey. *Journal of the American Geriatrics Society*, Vol. 3, p. 181. March 1955.

The four groups of primary glaucoma are described, and indications given for differentiating the acute uncompensated type from iritis, iridocyclitis, conjunctivitis and keratitis. The milder chronic compensated disease may be confused with cataract. Chronic uveitis may resemble acute or chronic glaucoma.

In order to reach the estimated million undiagnosed cases of glaucoma in the country, closer cooperation is necessary between general practitioners, industrial physicians, public health agencies and ophthalmologists. Every physician should make the determination of intraocular pressure part of his routine in examining patients. A simple hypertension indicator can be obtained by the general practitioner through an ophthalmologist who states his willingness to teach the use of the instrument.

Glaucoma Survey of 1,000 Hospital Patients. D. G. Vaughan, T. Asbury, W. F. Hoyt, R. H. Bock and Jean M. Swain. *Transactions of the Pacific Coast Oto-Ophthalmological Society*, 1955.

In a project supported by the National Society for the Prevention of Blindness tonometric studies were made of 1,000 patients in a California mental hospital who were 40 years or older and had no ocular complaints. A fundus examination was made of each patient, and those with high tonometric readings were given the new multiple pattern field test.

Nineteen patients, or 1.9 per cent, revealed an unsuspected glaucoma, and 14 others were diagnosed as suspects. Nearly twice as many males as females were glaucomatous, and the age group from 60 to 70 years had 10 of the verified cases. No apparent connection was found between glaucoma and mental illness or electroshock treatment. There were only three shallow anterior chambers, and these occurred in nonglaucomatous persons.

Physicians and the general public need to be alerted to the dangers of glaucoma. Dr. Vaughan quizzed 100 private patients, and found 69 had never heard of glaucoma, and 11 had only a vague notion about the disease.

In discussing the paper Dr. O. H. Ellis commended the careful procedures followed in the survey. Another thorough study in a suburb of Los Angeles recently found glaucoma in 3 per cent of 700 persons. He felt that hasty mass screenings were ill-advised, since glaucomatous persons who happened to have a normal tension when examined might be given a false sense of security, and thus fail to obtain an early diagnosis.

Primary Glaucoma: Etiology and General Considerations. D. Vail. *American Journal of Ophthalmology*, Vol. 41, p. 207. February 1956.

Though our knowledge of the etiology and treatment of glaucoma is still scanty, there is reason for optimism about a solution of many of the problems of the primary glaucomas. In the last decade progress has been made along physico-chemical lines, increasing our understanding of the mechanism of normal intraocular pressure and the formation and elimination of the aqueous, though there are many un-

answered questions about the intraocular circulation of the aqueous.

Primary glaucoma is a complexity of diseases whose chief symptom is the elevation of the intraocular pressure. It is manifested in two forms which are probably entirely separate disease entities: chronic simple (noncongestive) and acute inflammatory glaucoma.

Duke-Elder and others have demonstrated diurnal rhythms in intraocular pressure which are basic to the individual. In simple glaucoma there are wild oscillations in these rhythms, especially in the early stages of the disease, which usually diminish as the disease progresses. This phasic swing is more significant than the height of the intraocular tension in early diagnosis, and is often seen before glaucoma is clinically evident. The individual rhythm is independent of blood pressure, age, sex, refraction condition and width of angle of the anterior chamber, and is preserved with some modification after a successful drainage operation. It must stem from an underlying circulatory instability.

Acute inflammatory glaucoma occurs most frequently in eyes with anatomically narrow angles associated with hyperopia, which predispose them to attacks of the disease. There is good evidence that this narrow angle is hereditary and familial, anatomic and architectural. In such an eye mechanical factors or a neurovascular crisis may precipitate an acute attack. Unlike simple glaucoma, in which the apparent outflow pressure remains abnormally high when the ocular tension is normalized, congestive glaucoma, in its acute stages only, shows an obstruction to the aqueous outflow which disappears after the attack.

The key point of differentiation between the two types of primary glaucoma is the narrow angle and shallow anterior chamber. The concept that acute inflammatory glaucoma is an entirely separate disease entity should simplify further studies.

Evaluation of the Berens-Tolman Ocular Hypertension Indicator. Comparative Study of the Berens-Tolman Ocular Hypertension Tonometer and the Schiøtz Tonometer in Glaucomatous and Nonglaucomatous Patients. M. R. Cholst and I. Horowitz. *Journal of the American Medical Association*, Vol. 160, p. 661. February 25, 1956.

This simplified instrument was devised to help general practitioners in rapid screening of their patients, especially those over 40, for signs of glaucoma. It indicates whether intraocular tension is above or below normal, which for purposes of this study was set at 25 mm. of mercury.

This instrument was evaluated against the standard Schiøtz tonometer in a study of 180 patients from the glaucoma clinic of the New York Eye and Ear Infirmary. The group included chronic, secondary, congenital and absolute glaucoma and the ages of the patients ranged from 23 to 76 years. In the 57 eyes found to have an elevated tension with the Schiøtz tonometer the Berens-Tolman indicator failed to register hypertension in one eye with 32 mm. Hg Schiøtz and two with 30 mm. All normal and low readings on the standard tonometer were accurately corroborated by the Berens-Tolman indicator. In a control series of 32 patients without hypertension the two tonometers showed no discrepancy.

Advising Patients with Hereditary Eye Disease. P. Thomas Manchester, Jr. *American Journal of Ophthalmology*, Vol. 40, p. 412. September 1955.

There are several serious eye conditions which are frequently familial. The ophthalmologist should diagnose the type of inheritance, which may be dominant, recessive or sex-linked, and advise the patient and his family accordingly.

Patients may appear with a disease which they have not inherited, but which they will pass on to future generations. Such persons are mutants, and the defective gene first appears in them. It is thought that all hereditary traits originate as mutations, which result from alterations within the complex amino-acid molecules composing the genes in the reproductive cells. These alterations may take place in the normal parents as a result of injury, radiation, biochemical effects, or reduction division.

Dominant traits are as a rule transmitted by an affected parent to about half of his children. Normal members of the family such as sibs and aunts and uncles do not carry the dominant gene and thus will have normal children. In other words, a particular disease inherited dominantly would affect about half the members in each generation.

Persons carrying the gene for a simple dominant feature like glaucoma or aniridia almost always given evidence of the disease. What is called "irregular dominance" may occur when glaucoma is transmitted by a parent with seemingly normal eyes. In such cases the familial tendency to glaucoma has perhaps been corrected by fortunate environmental factors. If the hereditary type of glaucoma is recognized in one member of the family, even his seemingly normal relatives should be watched closely.

Retinoblastoma is dominantly inherited, but in this disease if the parents have normal eyes the child must be considered a mutant. His parents will in all likelihood never have another child with the same disease. Of the 595 sporadic cases of retinoblastoma in the literature, only seven siblings developed the disease. But the patient himself, if he survives, should not have children, since the records show a higher than 50 per cent chance of such offspring developing retinoblastoma.

Most cases of cataract are merely sporadic; those which are inherited are usually dominant. However, certain dominant traits such as aniridia, blue sclerotics, and phacomatoses, are virtually always hereditary.

A group which includes pure albinism and microphakia is recessive in type. In this mode of inheritance the defective gene is hidden in the parent, and only when both parents happen to have the same hidden gene does the disease appear in their children. Even then only one child in four is affected. Recessive traits are more likely to appear when relatives marry. If the affected child marries a person who does not carry the trait, his children will be normal. Unaffected members of the family will not transmit the disease, providing their mates do not carry the trait. A defective gene must come from each parent to produce anomalies of the recessive type.

Sex-linked traits are transmitted by both sexes but affect only males. There are no significant eye diseases inherited as sex-linked which affect

females, and when transmitted, they affect one male out of two. The patient's children will not have the disease, though his daughters may be carriers.

The Value of Heredity in the Detection and Study of Glaucoma. Leo Kellerman and Adolph Posner. *American Journal of Ophthalmology*, Vol. 40, p. 681. November 1955.

A study of heredity in glaucoma was made in 199 patients with known primary glaucoma and 192 of their relatives. A positive family history of the disease was obtained from 27 (13.5 per cent) of the patients, and 11 more gave questionably positive histories. Examination of their relatives showed eight (4 per cent) cases of chronic simple glaucoma of which seven were in very early stages. None of these seven had any previous awareness of disease in their eyes.

In addition to these findings, 11 of the relatives had borderline cases. The normal members of families with discovered and borderline cases showed an incidence of 24 per cent with tensions of 25 mm. of mercury and over, as compared with 6 per cent in families where no glaucoma was discovered. High normal tension may thus suggest a preclinical phase of chronic simple glaucoma, especially in families known to have glaucomatous members.

In all 248 pedigrees were collected, of which 34 indicated the dominant mode of heredity.

Members of families in which acute glaucoma had occurred showed a 25 per cent incidence of narrow chamber angles as compared to 7 per cent among relatives of chronic simple glaucoma patients. This points to the hereditary nature of a narrow angle, predisposing the eye to this type of the disease. Studies of larger samples should determine whether the two types of glaucoma are separate diseases, both clinically and genetically.

Your Eyes and Heredity. Conrad Berens. *Today's Health*, Vol. 33, p. 34. November 1955.

Inherited eye traits include normal attributes such as the size and shape of the eyeball and defects ranging from minor anomalies to those causing blindness. The modes of inheritance vary for each disease, and the study of ocular genetics is still far from complete.

Cataract appears to be the most prevalent hereditary disease, and even senile cataract has revealed hereditary patterns. However, it may be caused also by environmental factors such as infection, chemical poisoning or injury. In the same way glaucoma, classed along with cataract as dominantly inherited, is variable, and may show recessive and sex-linked patterns. Night blindness is sometimes a dominant and sometimes a recessive trait, or may be caused by vitamin A deficiency.

Studies of identical twins have shown that heredity is a factor in myopia and strabismus. Certain authorities suggest that one person in four carries the gene for strabismus.

CHILDREN'S EYE INJURIES

Dr. Dan Currie's article on "Eye Injuries from Christmas Toys" has been reprinted by NSPB from the Spring Issue of the REVIEW. Pub. No. 25. Price 5 cents.

BOOKS AND PAMPHLETS

HELEN KELLER: SKETCH FOR A PORTRAIT. Van Wyck Brooks. E. P. Dutton & Company, New York, 1956. 166 p. $3.00.

One of many tributes paid Helen Keller on her seventy-fifth birthday, this portrait by her friend and neighbor has intrinsic value, as have all Mr. Brooks's writings, and beyond that, values that stem from Miss Keller herself and that start a chain reaction in all who know her. She began life an almost total negative, a "living nullity", and her journey to the positive pole has proved over and over the potentialities of the human spirit. After spending an evening with her Clifton Fadiman wrote, "compared with Helen Keller, most of us in the room seemed somehow handicapped."

To many readers the most wonderful part of this story is how Helen Keller burst out of her dark, soundless early childhood, finding "deeper levels of the will than the normal discover in themselves" and developed exquisitely acute perceptions to replace sight and hearing. She found ways to feed her eager brain, channels for communication with people near her or halfway across the globe. Her "ten eyes" of touch often discover more than a seeing person can observe. Once in a plane she told the pilot that she guessed their altitude to be 8,000 feet, and the altimeter confirmed this precisely. She can tell purple lilacs from white, grasp the character of strangers in a flash, and recognize at least one of Beethoven's symphonies played over the radio.

Mr. Brooks has so vividly described the miracle Anne Sullivan worked in liberating her pupil's great gifts, one after the other, that it arouses the question about the lost potentials in all those handicapped children who have no inspired "Teacher" constantly at their side. And he makes it clear that the key to Helen Keller's very great power is the fact that once her personal victory was won she began her work of liberating all the visually handicapped, a spiral of widening accomplishment and of inspiration to others.

From the first, knowing that much blindness was preventable, she poured her radiant energies into channels which opened early in the century to clear away the poverty, ignorance and evasion of realities that were often responsible for blindness. In 1907, when venereal disease was never openly discussed, she wrote a frank article for a woman's magazine about ophthalmia neonatorum, which was then blinding babies by the thousands. In 1908 the Committee on Prevention of Blindness of the New York Association for the Blind was formed, with Helen Keller as honorary vice-president, and she has continued in that office for an unbroken half century during which the old Committee has become the National Society for the Prevention of Blindness. Since her work has been unflagging, she must hold the longest record for preventive activities of anyone now living—unique in this respect, as she is in so many others.

Mr. Brooks's portrait conveys the central quality of Helen Keller—joy. "Delight is essential to growth and self improvement," she once wrote.

People began calling her a saint when she was a young woman, and Mr. Brooks agrees that "in this matter of gaiety the saints have generally been like her" and that "like many of the saints she has combined a spiritual and mystical force with an indomitable energy in practical matters." When she was a young girl William James wrote her, "The sum and substance of it is that you are a blessing."

To this one-word description of a marvellously rich personality Helen Keller's multitude of friends throughout the world can agree.

The Story of Blindness. Gabriel Farrell. Harvard University Press, Cambridge, Mass. 1956. 270 p. $4.50.

The main emphasis in this valuable book is social: "to tell those who still enjoy the full benefit of sight that they have a responsibility for that segment of society which is without sight. The burden rests the more heavily upon the sighted when it is realized that fully one-half, and perhaps three-quarters, of blindness could be prevented by appropriate medical and social services." Because blindness has always been a social problem, Dr. Farrell's historical method is bound to produce a hopeful narrative, since so much has been accomplished toward the conquest of blindness.

The author ranges through the world as well as through history, and much information is given about other countries. However, the narrative is firmly integrated because it centers around the Perkins School for the Blind, of which Dr. Farrell was director for over 20 years, and which has been a good yardstick of progress. His story also has a central character, Samuel Gridley Howe, whom he considers the greatest of all American leaders in the field of the blind.

Howe was so sound in his thinking that often he is cited in a modern context. The education of blind and partially seeing children is a problem debated today, but Howe and his close friend Horace Mann believed that no child should be segregated in schools because of physical infirmity. Dr. Farrell warmly agrees that those with visual handicaps should be integrated in society, and cites the position of the National Society for the Prevention of Blindness in favor of cooperative classes for the partially seeing.

One of the most fascinating chapters in this book deals with new and projected devices to help the visually handicapped read. Persons with only 5/200 vision can read print with the Megascope developed by the American Foundation for the Blind. But those with no residual vision may soon be using devices based on radar and electronics, which turn the printed page into sound. Because of human complexities, Dr. Farrell sees a danger in "overloading the blind with cumbersome devices." He believes that the ability of persons to use limited sight depends on how they use their brains, and on the right work being available to them.

The chapter "Causes and Cures of Blindness" records victories in the United States and some other countries against the scourges of trachoma, ophthalmia neonatorum, smallpox and tuberculosis. But Dr. Farrell warns that syphilis, hereditary eye diseases, and accidents are still to be reckoned with. Modern longevity involves an increase in cataract and glaucoma; at the other end of the span the saving

of premature babies has involved retrolental fibroplasia, which at least is preventable. The 1,500,000 diabetics in this country include teen-age boys who "slip up on treatments, and many of them arrive at schools for the blind." Other teen-agers, mostly boys, have serious eye injuries, as a rule during unsupervised play. Legislation against fireworks and BB guns is not yet complete.

Eye research is the most valuable avenue for prevention of blindness, which this author believes is more important than alleviating the lot of the blind. But in a given year eye research funds are only one per cent of what is spent in that year for the blind. Medical research, physical rehabilitation and social acceptance will, he believes, transform the lot of the visually handicapped.

Our Blind Children: Growing and Learning With Them. Berthold Lowenfeld, Ph.D. Charles C. Thomas, Springfield, Ill., 1956. 205 p. $5.50.

The occasion for writing this book for the parents of blind children is a tragic one—the thousands of children blinded in the last decade by retrolental fibroplasia. Dr. Lowenfeld, superintendent of the California School for the Blind in Berkeley, points out that nearly half the blindness in preschool children was caused by this disease, and adds that there are not yet adequate statistics on the degree of vision these victims of RLF will possess when they begin school.

In discussing visual acuity and field of vision, he adds a timely warning that "visual acuity is not the only factor which determines a child's efficiency in using his vision. Some children are very skillful in using even

The Story of BLINDNESS

By
GABRIEL FARRELL

Director Emeritus of the Perkins School for the Blind

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a small amount of vision, while others with considerably better visual acuity do not make the best of it . . . children who are encouraged to make use of whatever vision they have and who are supplied with stimulating visual experiences will more likely make good use of their eyes."

Dr. Lowenfeld offers guidance to the parents in training their blind children from early infancy through the school years. He suggests that teachers should know the cause of a child's total or partial blindness in order to protect him from any activities which might aggravate his visual defect. Teachers should also understand his current eye condition, especially if a progressive disease is involved. Advice is offered about helping the child to adjust to changes in his vision, either for the better or worse.

Health Observation of School Children: Second Edition. George M. Wheatley, M.D., M.P.H. and Grace T. Hallock. McGraw-Hill Book Company, New York, 1956. 488 p. $6.50.

The wide acceptance by teachers and school nurses of the first edition of this book, published five years ago, has occasioned a revision in which charts and statistics have been brought up to date and advances in child health knowledge incorporated. As before, the authors have begun by describing the normal patterns of function and growth in children, and then discuss disorders and defects which the teacher can train herself to observe.

The section on eyes, like all the others, is a full, detailed presentation of anatomy, physiology, and clinical signs which the teacher is in a strategic position to notice. All chapters end with a list of suggested reading, and a quiz which the reader may give herself as a test of her skill in observation. The book is a valuable contribution to preventive medicine which amplifies the filmstrip prepared by these authors and issued in 1945 by the Metropolitan Life Insurance Company.

Guiding Principles and Procedures for Industrial Nurses. Council on Industrial Health, American Medical Association. Chicago, 1955. 33 p.

This report replaces the Council's previous publication, "Standing Orders for Nurses in Industry." The phrase "standing orders" is considered inappropriate to the occupational health nurse, who must often act alone in handling routine and emergency situations, unlike her colleague in the hospital who is given signed orders after the physician has seen the patient. For this reason the Council has suggested standard procedures, covering the chief situations likely to confront the industrial nurse, which the physician-in-charge may modify.

In the section on eye injuries the Council stipulates that "no patient with an eye injury should be discharged without examination by the physician." It counsels the nurse about keeping medications and implements sterile and her own hands clean. "Remember that early symptoms of infections can simulate a foreign body."

As for foreign bodies, "the nurse should attempt to remove only those . . . which can be readily located and which can be easily washed out or removed with a moist sterile cotton applicator. An antiseptic may be applied if the physician so orders. Corneal foreign bodies always should be referred to a physician."

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